

DSR-250/250P

RMT-811

SERVICE MANUAL

Self Diagnosis
Supported model

DVCAM™

DV Digital
Video
Cassette

Mini DV Digital
Video
Cassette

C/M Cassette
Memory

MEMORY STICK

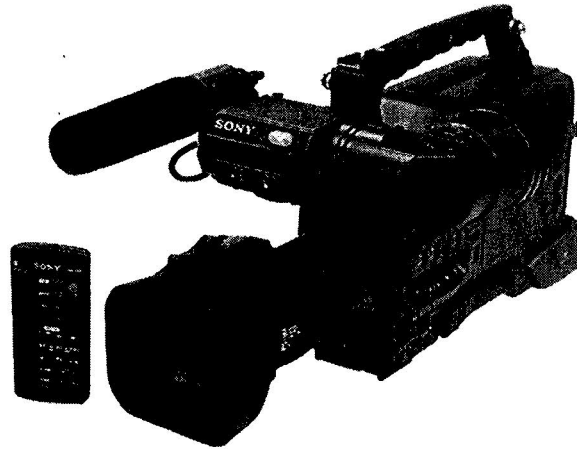


Photo : DSR-250
RMT-811

US Model
Canadian Model
DSR-250

AEP Model
DSR-250P

R MECHANISM

NTSC model : DSR-250
PAL model : DSR-250P

SPECIFICATIONS

Video camera recorder

System

Video recording system

2 rotary heads

Helical scanning system

Audio recording system

Rotary heads, PCM system

Quantization: Fs32 kHz (12 bits,

channels 1/2, channels 3/4),

Fs48 kHz (16 bits, channels 1/2)

Video signal

NTSC color, EIA standards (DSR-250),

PAL colour, CCIR standards

(DSR-250P)

Usable cassette

DVCAM cassette with the

DVCAM mark printed

Mini DVCAM cassette with the

DVCAM mark printed

DV cassette with the **DV** mark

printed

Mini DV cassette with the **Mini DV**

mark printed

Tape speed

DVCAM format:

Approx. 28.218 mm/s

DV format SP mode: Approx.

18.812 mm/s

Recording/playback time

DVCAM format: 184 min (using

cassette PDV-184ME)

DV format SP mode: 270 min

(using cassette PDV-184ME)

Fast-forward/rewind time

Approx. 45 s (using cassette

DVM60/PDVM-40ME)

Approx. 2 min 30 s (using cassette

PDV-184ME)

Viewfinder

Electric viewfinder (B&W)

Image device

1/3 type CCD (3 Charge Coupled

Device) Approx. 380 000 pixels

(Effective: Approx. 340 000 pixels)

(DSR-250), Approx. 450 000 pixels

(Effective: Approx. 400 000 pixels)

(DSR-250P)

Lens

Combined power zoom lens

Filter diameter 58 mm (2 3/8 in)

12x (Optical), 48x (Digital)

F1.6 - 2.4

Focal length

6 - 72 mm (1/4 - 2 7/8 in)

When converted to a 35 mm still

camera

43.2 - 518.4 mm (1 3/4 - 20 1/2 in)

Colour temperature

Auto, $\odot$ Indoor (3 200 K),

$\odot$ Outdoor (5 800 K), $\odot$ (A, B)

Minimum illumination

2 lux (F1.6)

Input/Output connectors

VIDEO IN/OUT

Input/output auto switch

RCA pin-jack, 1 Vp-p, 75 ohms,

unbalanced, sync negative

S VIDEO

Input/output auto switch

4-pin mini DIN

Luminance signal: 1 Vp-p,

75 ohms, unbalanced

Chrominance signal: 0.286 Vp-p

(DSR-250), 0.3 Vp-p (DSR-250P),

75 ohms, unbalanced

AUDIO IN/OUT CH-1/CH-2

Input/output auto switch

RCA pin-jack, 245 mV, (at output

impedance more than 47 kilohms)

Output impedance with less than

2.2 kilohms

Input impedance more than

47 kilohms

AUDIO IN CH1/CH2

XLR 3-pin, female

-60 dBu: 6.8 kilohms,

+4 dBu: 6.8 kilohms

(0 dBu = 0.775 Vrms)

PHONES

Stereo minijack (ϕ 3.5 mm)

$\odot$ LANC control jack

Stereo mini-minijack (ϕ 2.5 mm)

MIC IN +48V

XLR 3-pin, female

VF

20-pin

LIGHT

2-pin

i DV IN/OUT

6-pin connector

Speaker

Dynamic speaker (ϕ 20 mm)

DC IN 12V

XLR 4-pin, female

DC OUT 12V

4-pin, male

LCD screen

Picture

2.5 type measured diagonally

49.9 $\times$ 37.3 mm (2 $\times$ 1 1/2 in)

Total dot number

200 640 (880 $\times$ 228)

General

Peak inrush current (DSR-250P)

(1) Hot switching inrush current,

measured in accordance with

European standard EN55103-1:

6.3 A (230 V)

Power requirements

14.4 V (Lithium-ion battery pack)

12 to 17 V (AC power adaptor)

Average power consumption

(when using the battery pack)

During camera recording using

LCD

12.1 W

Viewfinder

10.5 W

Operating temperature

0 $^{\circ}$ C to 40 $^{\circ}$ C (32 $^{\circ}$ F to 104 $^{\circ}$ F)

Storage temperature

-20 $^{\circ}$ C to +60 $^{\circ}$ C (-4 $^{\circ}$ F to +140 $^{\circ}$ F)

Dimensions (approx.)

242 $\times$ 251 $\times$ 509 mm (9 5/8 $\times$ 10 $\times$

20 1/8 in) (w/h/d)

Mass (approx.)

3.5 kg (7 lb 11 oz)

main unit only

4.9 kg (10 lb 13 oz)

including the BP-L40 (A) battery

pack, cassette PDV-184ME,

microphone, viewfinder, and

hood cap

Supplied accessories

See page 2.

— Continued on next page —

DVCAM™

DIGITAL CAMCORDER

SONY®

"Memory Stick"

Memory

Flash memory

4MB: MSA-4A

Operating voltage

2.7 V -3.6 V

Power consumption

Approx. 45 mA in the operating mode

Approx. 130 μ A in the standby mode

Dimensions (approx.)

50 $\times$ 2.8 $\times$ 21.5 mm

(2 $\times$ 1/8 $\times$ 7/8 in) (w/h/d)

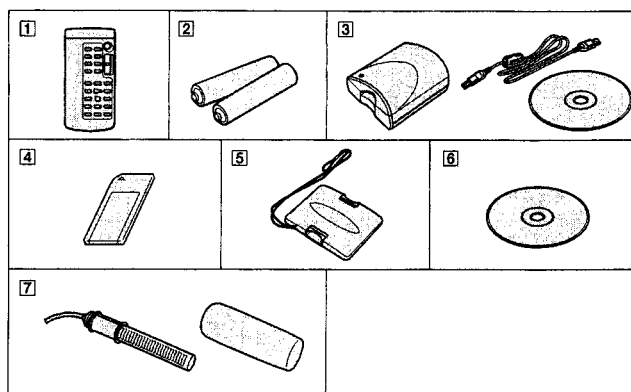
Mass (approx.)

4 g (0.14 oz)

Design and specifications are subject to change without notice.

• SUPPLIED ACCESSORIES

Check that the following accessories are supplied with your camcorder.



① Wireless Remote Commander (1)

② R6 (Size AA) battery for Remote Commander (2)

③ Memory Stick Reader/Writer (1), USB cable (1), Driver software (CD ROM) (1)

④ "Memory Stick" (1)

⑤ Hood cap (1)

⑥ Application software: PictureGear 4.1Lite (CD ROM) (1)

⑦ Microphone (1), Wind screen (1)

⑧ Operating instructions (2)

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK $\triangle$ OR DOTTED LINE WITH MARK $\triangle$ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE $\triangle$ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

- Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
- Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
- Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
- Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
- Check the B+ voltage to see it is at the values specified.
- Flexible Circuit Board Repairing
 - Keep the temperature of the soldering iron around 270°C during repairing.
 - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
 - Be careful not to apply force on the conductor when soldering or unsoldering.

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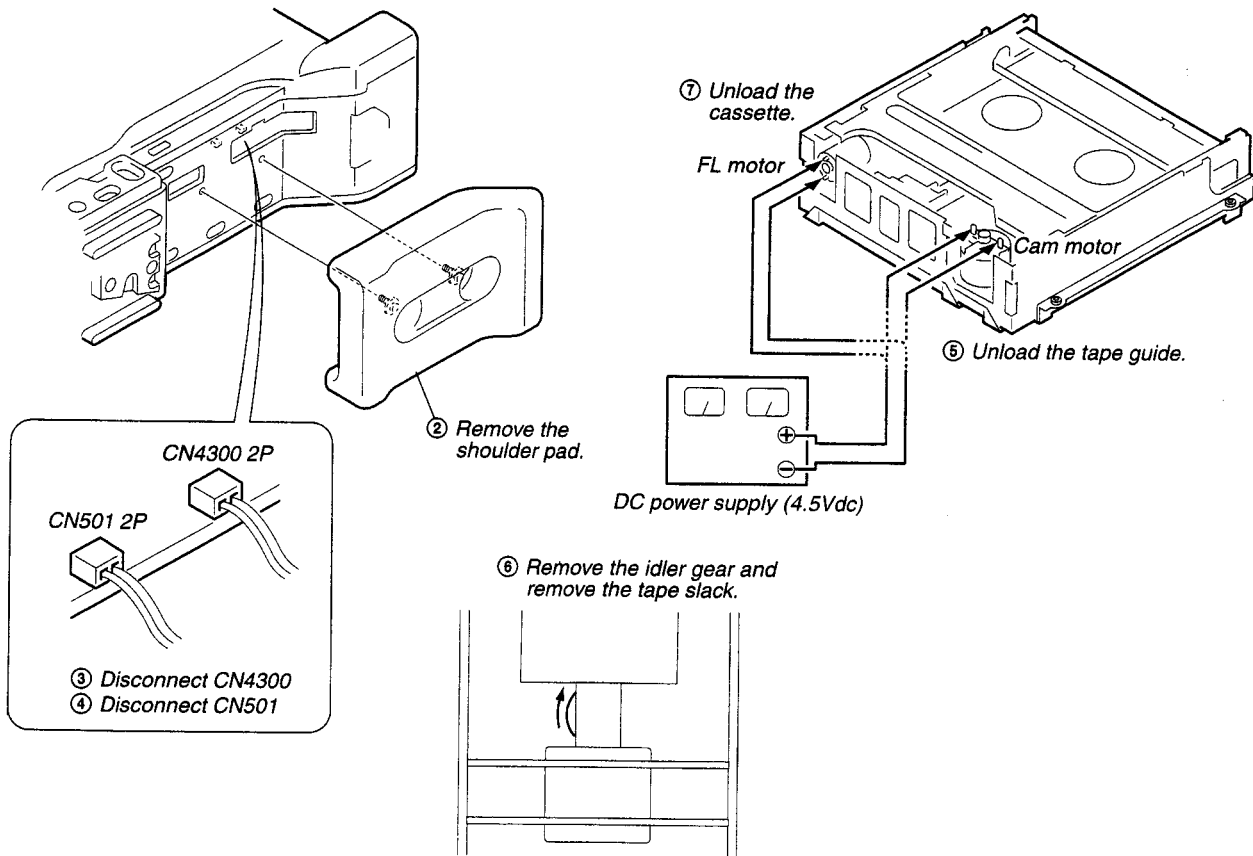
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* Color reproduction frame is shown on page 387.
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SERVICE NOTE

1. TO TAKE OUT A CASSETTE WHEN NOT EJECT (FORCE EJECT)

- ① Refer to 2-6. to remove the cabinet (L) assembly.
- ② Remove the shoulder pad.
- ③ Remove the CN4300 (2P) of VI-156 board.
- ④ Remove the CN501 (2P) of VI-156 board.
- ⑤ Supply +4.5V from the DC power supply to the cam motor and unload the tape guide.
- ⑥ Rotate the idler gear by your finger to the clockwise and remove the tape slack.
- ⑦ Supply +4.5V from the DC power supply to the FL motor (Cassette motor) and unload the cassette.



What to do when a user forgets a password

This camcorder has the forced log insertion function. A password is inputted, and this function is set up. When this function was set up, this camcorder doesn't move if the memory stick which memorize a correct logo isn't inserted. To release the forced logo function, the correct password must be input.

This password is memorized in the IC1105 (EEPROM) on VI-156 board. Therefore, when a user forgets the password, replace the IC1105. This IC1105 memorizes the HRS METER data (Hour meter data: page A, address 00 to 13), too. Therefore, replace the IC1105 in the following order to copy the HRS METER data.

Replacing procedure:

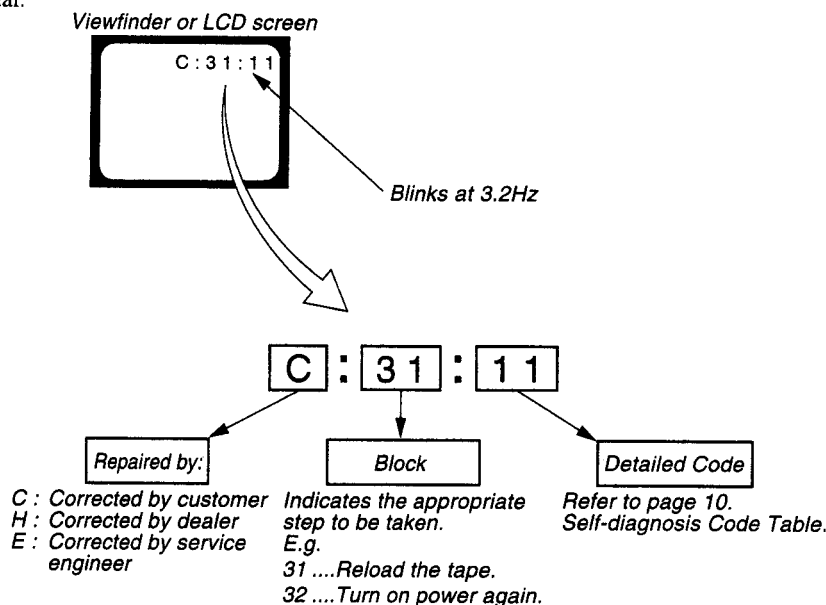
- 1) Note down the data of page A, address 00 to 13.
- 2) Replace IC1105 (EEPROM) on VI-156 board.
- 3) To page A, address 00 to 13, input the data noted down.
(Refer to "HRS METER (Hours meter)" of "5-4. SERVICE MODE")

SELF-DIAGNOSIS FUNCTION

1. SELF-DIAGNOSIS FUNCTION

When problems occur while the unit is operating, the self-diagnosis function starts working, and displays on the viewfinder or LCD screen what to do. This function consists of two display; self-diagnosis display and service mode display.

Details of the self-diagnosis functions are provided in the Instruction manual.



2. SELF-DIAGNOSIS DISPLAY

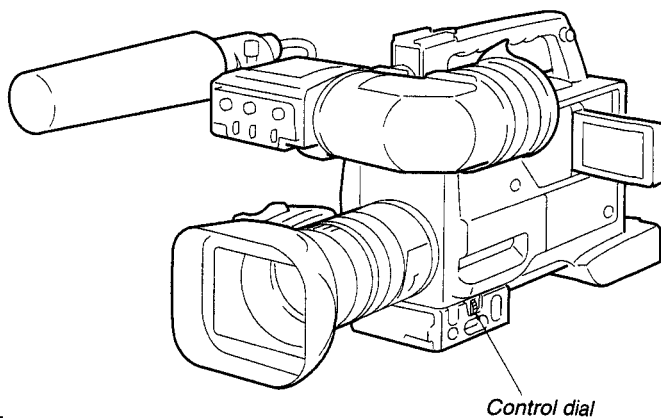
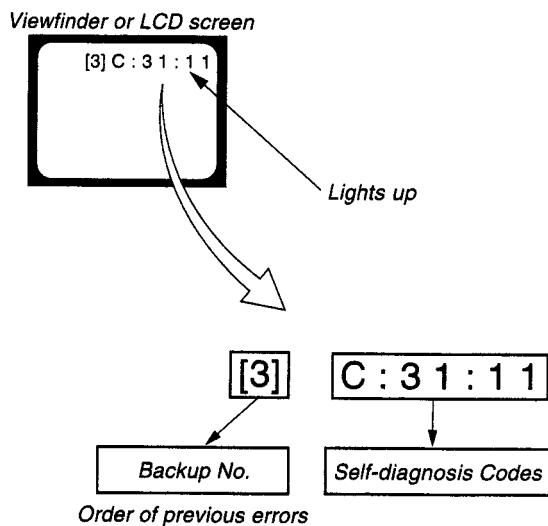
When problems occur while the unit is operating, the counter of the viewfinder or LCD screen consists of an alphabet and 4-digit numbers, which blinks at 3.2 Hz. This 5-character display indicates the “repaired by:”, “block” in which the problem occurred, and “detailed code” of the problem.

3. SERVICE MODE DISPLAY

The service mode display shows up to six self-diagnosis codes shown in the past.

3-1. Display Method

While pressing the “STOP” key, set the POWER switch from OFF to ON, and continue pressing the “STOP” key for 5 seconds continuously. The service mode will be displayed, and the counter will show the backup No. and the 5-character self-diagnosis codes.



3-2. Switching of Backup No.

By rotating the control dial, past self-diagnosis codes will be shown in order. The backup No. in the [] indicates the order in which the problem occurred. (If the number of problems which occurred is less than 6, only the number of problems which occurred will be shown.)

- | | |
|----------------------------|------------------------------|
| [1] : Occurred first time | [4] : Occurred fourth time |
| [2] : Occurred second time | [5] : Occurred fifth time |
| [3] : Occurred third time | [6] : Occurred the last time |

3-3. End of Display

Turning OFF the power supply will end the service mode display.

Note: The “self-diagnosis display” data will be backed up by the coin-type lithium battery (BT501) of the cabinet (R) assembly (SW-343 board). When the cabinet (R) assembly is removed, the “self-diagnosis display” data will be lost by initialization.

4. SELF-DIAGNOSIS CODE TABLE

Self-diagnosis Code				Symptom/State	Correction
Repaired by:	Block Function	Detailed Code			
C	2 1	0 0	Condensation.	Remove the cassette, and insert it again after one hour.	
C	2 2	0 0	Video head is dirty.	Clean with the optional cleaning cassette.	
C	3 1	1 0	LOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.	
C	3 1	1 1	UNLOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.	
C	3 1	2 0	T reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.	
C	3 1	2 1	Winding S reel fault when counting the rest of tape.	Load the tape again, and perform operations from the beginning.	
C	3 1	2 2	T reel fault.	Load the tape again, and perform operations from the beginning.	
C	3 1	2 3	S reel fault.	Load the tape again, and perform operations from the beginning.	
C	3 1	2 4	T reel fault.	Load the tape again, and perform operations from the beginning.	
C	3 1	3 0	FG fault when starting capstan.	Load the tape again, and perform operations from the beginning.	
C	3 1	4 0	FG fault when starting drum.	Load the tape again, and perform operations from the beginning.	
C	3 1	4 2	FG fault during normal drum operations.	Load the tape again, and perform operations from the beginning.	
C	3 1	1 0	LOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.	
C	3 1	1 1	UNLOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.	
C	3 2	2 0	T reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.	
C	3 2	2 1	Winding S reel fault when counting the rest of tape.	Remove the battery or power cable, connect, and perform operations from the beginning.	
C	3 2	2 2	T reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.	
C	3 2	2 3	S reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.	
C	3 2	2 4	T reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.	
C	3 2	3 0	FG fault when starting capstan.	Remove the battery or power cable, connect, and perform operations from the beginning.	
C	3 2	4 0	FG fault when starting drum	Remove the battery or power cable, connect, and perform operations from the beginning.	
C	3 2	4 2	FG fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning.	
E	6 1	0 0	Difficult to adjust focus (Cannot initialize focus.)	Inspect the lens block focus reset sensor (Pin ㉔ of CN001 on VI-156 board) when focusing is performed when the focusing is rotated in the focus manual mode, and the focus motor drive circuit (IC140 of VI-156 board) when the focusing is not performed.	
E	6 1	1 0	Zoom operations fault (Cannot initialize zoom lens.)	Inspect the lens block zoom reset sensor (Pin ㉔ of CN001 on VI-156 board) when zooming is performed when the zoom lever is operated and the zoom motor drive circuit (IC140 of VI-156 board) when zooming is not performed.	
E	6 2	0 0	Steadyshot function does not work well. (With pitch angular velocity sensor output stopped.)	Inspect pitch angular velocity sensor (SE601 of SE-116 board) peripheral circuits.	
E	6 2	0 1	Steadyshot function does not work well. (With yaw angular velocity sensor output stopped.)	Inspect yaw angular velocity sensor (SE600 of SE-116 board) peripheral circuits.	

This section is extracted from
instruction manual. (DSR-250P)

— Getting started —

Using this manual

As you read through this manual, buttons and settings on your camcorder are shown in capital letters.

e.g. Set the POWER switch to ON.

When you carry out an operation, you can hear a beep or a melody sound to indicate that the operation is being carried out.

Note on cassette memory

Your camcorder is based on the DVCAM/DV format. We recommend that you use a tape with cassette memory **CM**.

The functions which require different operations depending on whether or not the tape has cassette memory are:

- Searching the end point of the recording – end search (p. 29, 33)
- Searching a recording by index – index search (p. 77)
- Searching a recording by date – date search (p. 80)
- Searching for a photo – photo search (p. 82).

The functions you can operate only with cassette memory are:

- Searching the boundaries of recorded tape by title – title search (p. 79)
- Superimposing a title (p. 110)
- Making your own titles (p. 114)
- Labelling a cassette (p. 116).

For details, see page 158.



You see this mark in the introduction of the features that are operated only with cassette memory.

Tapes with cassette memory are marked with **CM** (Cassette Memory).

Using this manual

Note on TV colour systems

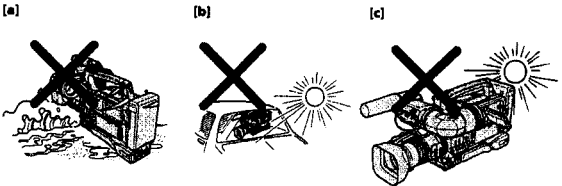
TV colour systems differ from country to country.
To view your recordings on a TV, you need a PAL system-based TV.

Copyright precautions

Television programs, films, video tapes, and other materials may be copyrighted.
Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

Precautions on camcorder care

- The LCD screen and the viewfinder are manufactured using high-precision technology. Effective ratio of pixels is 99.99% or more. However, there may be some tiny black points and/or bright points (red, blue, green or white) that constantly appear on the LCD screen and in the viewfinder. These phenomena are not malfunctions. These points do not affect the recorded picture in any way.
- Do not let your camcorder get wet. Keep your camcorder away from rain and sea water. Letting your camcorder get wet may cause your camcorder to malfunction. Sometimes this malfunction cannot be repaired [a].
- Never leave your camcorder exposed to temperatures above 60 °C (140 °F), such as in a car parked in the sun or under direct sunlight [b].
- Do not place your camcorder so as to point the viewfinder or the LCD screen or lens toward the sun. The inside of the viewfinder, LCD screen, or lens may be damaged [c].
- The use of the radio communication equipment such as cellular phones or transceivers near the unit may cause a malfunction and can affect the audio/video signals. The cellular phones or transceivers near the unit should be switched off.



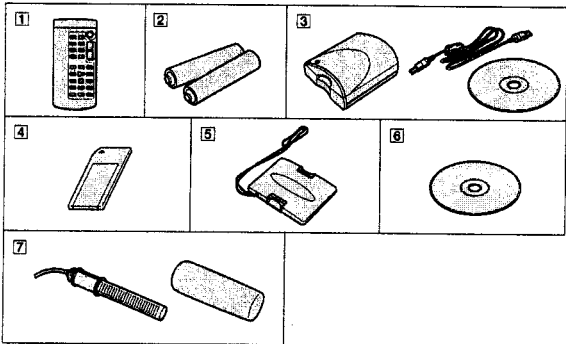
Contents of the recording cannot be compensated if recording or playback is not made due to a malfunction of the camcorder, video tape, etc.

4

5

Checking supplied accessories

Make sure that the following accessories are supplied with your camcorder.

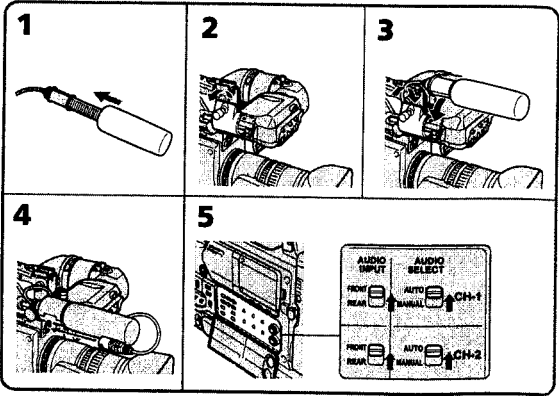


- 1 Wireless Remote Commander (1) (p. 188)
- 2 R6 (Size AA) battery for Remote Commander (2) (p. 189)
- 3 Memory Stick Reader/Writer (1), USB cable (1), Driver software (CD ROM) (1)
- 4 "Memory Stick" (1) (p. 129)
- 5 Hood cap (1) (p. 15)
- 6 Application software: PictureGear 4.1Lite (CD ROM) (1) (p. 145)
- 7 Microphone (1) (p. 7), Wind screen (1) (p. 7)
- 8 Operating instructions (2)

Step 1 Installing the microphone

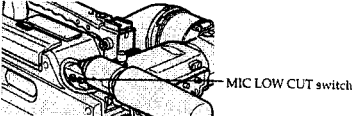
Install the supplied microphone. Be sure to connect the microphone plug to the MIC IN +48V connector.

- (1) Attach the wind screen to the microphone.
 - (2) Loosen the microphone holder screw and open the cover.
 - (3) Place the microphone into the holder with the model name (ECM-NV1) facing upward, close the cover, and tighten the screw.
 - (4) Connect the plug of the microphone to the MIC IN +48V connector.
 - (5) Set the AUDIO INPUT switches to FRONT, and the AUDIO SELECT switches to AUTO, for both channels 1 and 2.
- When you manually adjust the audio level, see "Adjusting the recording level manually – Sound recording level" on page 54.



When the wind is blowing hard

When inputting the sound via the MIC IN +48V connector, you can reduce the wind noise. Set the MIC LOW CUT switch to ON. This is only activated for the front microphone.



When you unplug the microphone plug
Unplug it while pressing the PUSH button.

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Step 2 Preparing the power supply

The following power supplies can be used with the camcorder.

- BP-L40 (A)/L60A/L90A lithium-ion battery pack.
 - NP-1B Ni-Cd Battery Pack (The DC-L1 Battery Adaptor is required.)
 - BP-90A Ni-Cd Battery Pack (The DC-L1 Battery Adaptor is required.)
 - AC power (The AC-550CE, AC-DN1/DN2A, or CMA-8ACE AC Adaptor is required.)
- Alternatively, you can make combined use of internal and external batteries, by mounting one of the above batteries as an internal battery and connecting, such as a BP-90A contained in a DC-210 Battery Adaptor to the DC IN 12V connector of the camcorder as an external source.

Using a BP-L40 (A)/L60A/L90A battery pack

With a battery pack, the camcorder will operate continuously for the time shown below.
BP-L40 (A): Approx. 190 minutes
BP-L60A: Approx. 420 minutes
BP-L90A: Approx. 700 minutes
 The numbers above indicate the time using only the viewfinder.

Before use, charge the battery pack with the BC-L50/L100CE Battery Charger.

Notes on using the battery pack

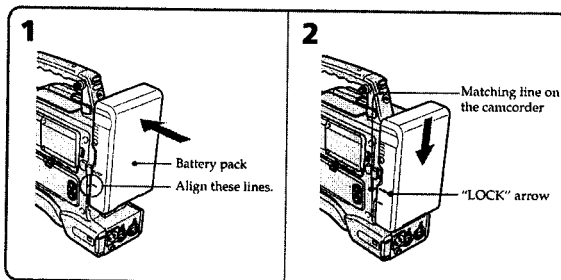
- A warm battery pack may not be fully recharged.
- Even when fully charged, battery packs gradually lose their charge naturally. Use the battery packs as soon as possible after recharging.
- To prolong the life of battery packs, store them in a cool place (about 20 °C (68 °F)), and charge in a place with an ambient temperature between 10 °C and 30 °C (50 °F to 86 °F).
- Before long-term storage, discharge the battery fully. This extends the battery life.
- It is recommended that the BP-L40 (A) be used at 30 W or less.
- When using the BP-L40 (A), the specified capacity may not be obtained if it is connected to the camcorder with accessories which is operated at 30 W or higher, especially when the ambient temperature is low.
- At low temperatures, the usable time of battery packs decreases. When the ambient temperature is 0 °C (32 °F), usable time decreases by about 10%. (However, the usable time is affected by the power consumption of the camcorder in addition to the usage status of the battery packs.) The usable time of battery packs increases if they are warmed to the room temperature (about 20 °C (68 °F)) before use at low temperatures.
- If you use the BP-L40 (A) at temperatures of 0 °C (32 °F) or below, when power consumption of the camcorder and accessories is 40 W or higher (due to using a video light, for example), power may break after a short time (a few minutes). To increase the usable time, store the BP-L40 (A) in a warm place, and power on the camcorder before the BP-L40 (A) cools down.
- Compared to the BP-L40 (A), the BP-L60A/L90A offer better performance at low temperatures. The BP-L60A/L90A are recommended for use at low temperatures.
- Carrying a spare battery pack is recommended.

The BP-L40 (A)/L60A/L90A is free from memory effect. There is no need to discharge it fully before recharging.

Step 2 Preparing the power supply

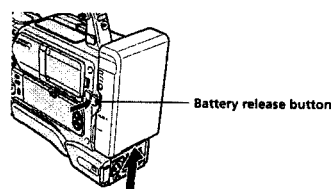
Installing the battery pack

- (1) Attach the battery pack against the rear of the camcorder, aligning the side line of the battery pack with the line on the camcorder.
- (2) Slide the battery pack down until its "LOCK" arrow points at the matching line on the camcorder.



To remove the battery pack

Holding the battery release button in, pull the battery pack up.



Getting started

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Step 2 Preparing the power supply

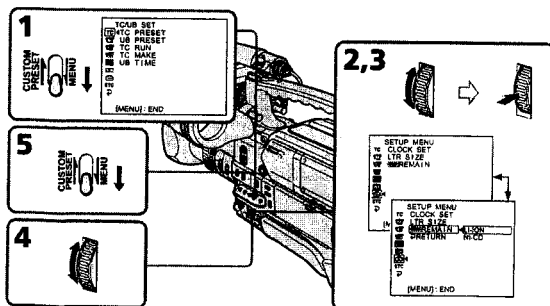
Setting up the type of the battery pack

Set up the type of the battery pack installed to the camcorder, using the menu. If you do not set the type, the battery remaining indicator will not indicate the correct capacity.

- (1) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu.
- (2) Turn the SEL/PUSH EXEC dial to select **LI-ION**, then press the dial.
- (3) Turn the SEL/PUSH EXEC dial to select **REMAIN**, then press the dial.
- (4) Turn the SEL/PUSH EXEC dial to select the type of the battery pack, then press the dial.

Setting	Meaning
LI-ION	When using a lithium-ion battery pack (BP-L40 (A)/L60A/L90A)
NI-CD	When using a nicad battery pack (NP-1B/BP-90A)

- (5) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to make the menu disappear.



When the battery capacity is low

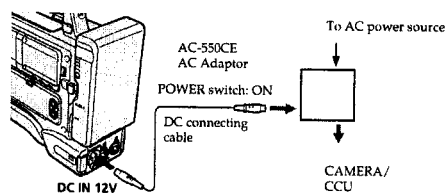
The BATT and REC lamps (red) in the viewfinder and the TALLY lamps on the camcorder will flash.

Step 2 Preparing the power supply

Using an AC adaptor

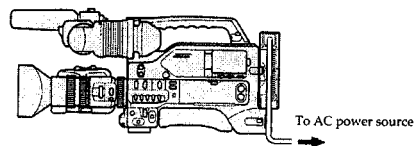
When using an AC-550CE AC Adaptor

Connect the camcorder to the AC power supply as shown in the following figure, and turn the POWER switch of the AC-550CE ON.



When using an AC-DN1 AC Adaptor

Mount the AC-DN1 on the camcorder in the same way as a battery pack, then connect to the AC power source.



Note

When total power consumption of the camcorder and accessories is 38 W or higher, or when using a video light, use the AC-DN2A AC adaptor (lower than 150 W).

Getting started

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Step 2 Preparing the power supply

Avoiding breaks in operation due to dead batteries

If you use both an internal battery pack and an external battery connected to the DC IN 12V connector at the same time, you can avoid breaks in operation due to the dead batteries.

When the external battery begins to fail and an internal battery pack is installed

Remove the DC output cable of the external battery from the DC IN 12V connector. The power source will switch to the internal battery pack.

When the external battery begins to fail and an internal battery pack is not installed

First install a fully charged internal battery pack to the camcorder, then remove the DC output cable of the external battery from the DC IN 12V connector. The power source will switch to the internal battery pack. To use an external battery again, connect a fully charged external battery to the DC IN 12V connector before removing the internal battery pack. The power source will switch to the external battery.

Continuous operation when operating with only an internal battery pack

First, connect a fully charged external battery to the DC IN 12V connector, then change the internal battery.

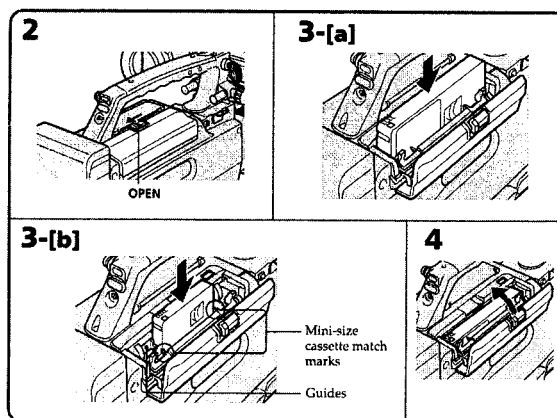
Notes

- Whenever an internal battery pack is installed and an external battery is connected to the DC IN 12V connector, the external battery is always used as the power source.
- There may be some noise on the video or audio signal at the instant the power sources are switched.
- When changing the battery pack, make sure that the POWER switch is set to OFF.
- When using the two NP-1B battery packs, be sure to change both of them at the same time.

Step 3 Inserting a cassette

The camcorder can use standard-size and mini-size DVCAM/DV cassettes. Before inserting a cassette, make sure that no cassette is in the cassette compartment. Inserting a cassette forcibly may damage internal parts of the camcorder.

- (1) Install the power source (p. 8).
- (2) While sliding OPEN in the direction of the arrow, open the cassette lid.
- (3) Insert the cassette with the window facing out and the REC/SAVE switch facing upward. Check for tape slack before inserting the cassette.
 - [a] Inserting a standard-size cassette**
Insert the cassette with the cassette window (on the front) facing outward.
 - [b] Inserting a mini-size cassette**
Insert the cassette with the cassette window (on the front) facing outward. Push the cassette between the both guides.
- (4) Close the cassette lid until it clicks.



To eject a cassette

Follow the procedure above, and take out the cassette by pressing the EJECT button in step 3.

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Step 3 Inserting a cassette

Note

Internal parts of the camcorder may become bent or otherwise damaged if you attempt to insert a mini-size cassette in the wrong direction (such as with the cassette turned backside front so the reel holes face the cassette holder window or with the cassette turned sideways so that a short side enters first).

When you use cassettes with cassette memory

Read the instruction about cassette memory to use this function properly (p. 158).

To prevent accidental erasure

Slide the REC/SAVE switch on the cassette to the SAVE position.



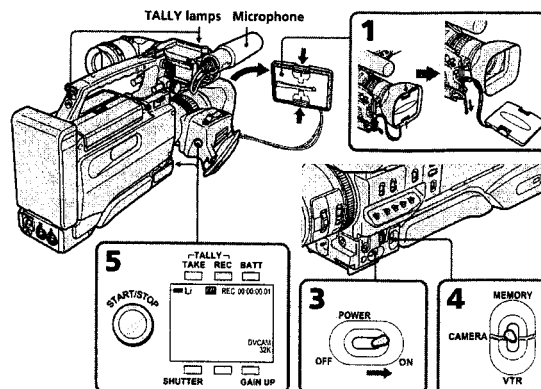
If  flashes even if the cassette has been inserted, insert the cassette again.

— Recording - Basics —

Recording a picture

Your camcorder automatically focuses for you.

- (1) Remove the hood cap and pull the hood cap string to fix it.
- (2) Install the power source and insert a cassette. See "Step 2" and "Step 3" for more information (p. 8 to 14).
- (3) Set the POWER switch to ON.
- (4) Set the MEMORY/CAMERA/VTR selector to CAMERA. Your camcorder is set to the standby mode. The picture now being shot is displayed in the viewfinder.
- (5) Press START/STOP. Your camcorder starts recording. "STBY" in the viewfinder changes to "REC" and the REC lamp in the viewfinder lights up. Also, the TALLY lamps located on the front and rear of your camcorder light up. To stop recording, press START/STOP again. This camcorder is equipped with two START/STOP buttons, and you can use either of them for recording start/stop.



Getting started

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Recording - Basics

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Recording a picture

To turn off the TALLY lamps

When you turn off the TALLY lamp located on the viewfinder, set the TALLY switch located on the front of the viewfinder to OFF, and when you turn off the TALLY lamp located on the rear, set the TALLY switch located below the TALLY lamp to OFF. The intensity of the front TALLY lamp can be chosen from high (HIGH) or low (LOW).

Note

Fasten the grip strap firmly.

Note on the progressive mode

If you intend to use the images on your PC or play the images back as still images, we recommend that you set PROG. SCAN to ON in the menu settings before shooting (p. 120). The picture quality improves in this mode, but if you shoot a moving subject, the image shakes when it is played back.

To enable smooth transition

Transition between the last scene you recorded and the next scene is smooth as long as you do not eject the cassette even if you turn off your camcorder. When you use a tape with cassette memory, however, you can make the transition smooth even after ejecting the cassette if you use the end search function (p. 29).

However, check the following:

- When you change the battery pack, set the POWER switch to OFF.
- Do not mix recordings in the DVCAM format and the DV format on one tape.
- If you record a tape in DV format, the transition of a tape may not be smooth. We recommend that you use DVCAM cassettes and set REC MODE to DVCAM in the menu settings to obtain reliable clear pictures.

Note on transition

The playback picture may be distorted or the time code may not be written properly between scenes when you change the recording format on one tape.

If you leave your camcorder in standby mode for five minutes

The head drum of the camcorder automatically stops rotating. This is to prevent the tape wear and save the battery power. To re-start recording, press the START/STOP button. It may take more time to start recording. However, this is not a malfunction.

Recording a picture

Using the ND filter

Using the ND filter (the ND filter 1 setting corresponds to 1/4 of the quantity of light and the ND filter 2 setting corresponds to 1/32 of the quantity of light), you can record a picture clearly by adjusting light amounts, even if you shoot under too bright conditions.

When the ND1 or ND2 indicator flashes on the LCD screen or in the viewfinder

The ND filter is necessary.

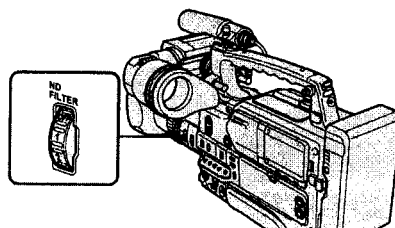
When ND 1 flashes, set the ND FILTER selector to 1 so that the ND 1 indicator on the LCD or viewfinder screen stops flashing and remains on.

When ND 2 flashes, set the ND FILTER selector to 2 so that the ND 2 indicator on the LCD or viewfinder screen stops flashing and remains on.

When ND OFF flashes on the LCD screen or in the viewfinder

The ND filter is not necessary. Set the ND FILTER selector to OFF so that the indicator disappears from the LCD or viewfinder screen.

The ND filter is now deactivated.



Note

If you set the ND FILTER selector to another positions during recording, the picture may be blurred or audio noise may occur. We recommend that you check the position of the ND FILTER selector before shooting.

When the DISPLAY switch located on the front of the viewfinder is set to OFF or turning off the indicators using the DISPLAY button

The ND filter indicator will disappear after you set the ND FILTER selector to the appropriate position according to the ND filter indication.

When you adjust the iris manually

The selected position is displayed, however, the recommended position of the ND FILTER selector is not indicated.

Recording - Basics

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Recording a picture

Usable cassettes

The camcorder can use standard-size and mini-size DVCAM/DV cassettes. (To ensure high-quality playback, editing, and storage of recorded contents, we recommend using highly reliable DVCAM cassettes).

The following table lists the cassettes that can be used in the camcorder.

Model name	Cassette size
PDV-64ME/64MEM/64N/94ME/124ME/124MEM/124N/184ME/184MEM/184N	Standard size
PDVM-12ME/22ME/32ME/32MEM/32N/40ME/40MEM/40N	Mini size

The numbers in the model names show maximum recording/playback time (minutes) for each model. For example, the maximum recording/playback time of the PDV-184ME is 184 minutes.

When you use a DV cassette, set REC MODE to DV SP in the menu settings. You can record on a tape 1.5 times longer than the DVCAM format.

To set the audio reference level

When using the camcorder in a editing system containing both consumer DV and professional equipment, setting the audio reference level to -12 dB is recommended. Set up the A REF LVL item in the menu settings (p. 120).

-12 dB (the default setting): Audio reference level commonly used for DV products (The maximum level is 0 dB.)

-18 dB: Audio reference level for professional use

Notes

- You cannot record on a tape in LP mode in the DV format.
- If you insert an incorrect type of cassette, it will be automatically ejected.
- Changing the audio reference level setting from -18 dB to -12 dB increases the audio recording level by 6 dB whether the AUDIO SELECT (CH-1/CH-2) switches are set to AUTO or MANUAL.

If you use a DV cassette without setting REC MODE to DV SP

The recordable time is 2/3 time that indicated on the cassette.

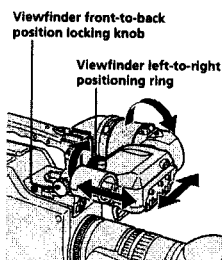
Cassettes that can be played back with your camcorder

You can play back both cassettes recorded in the DVCAM format or in the DV format, however, you cannot play back cassettes that were recorded in LP mode in the DV format.

Recording a picture

Adjusting the viewfinder position

To adjust the viewfinder left-to-right position, loosen the left-to-right positioning ring, and to adjust the front-to-back position, loosen the front-to-back position locking knob.



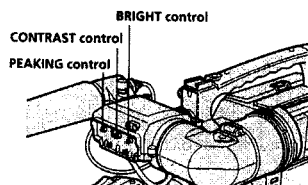
Recording - Basics

Left eye adaptor

By fitting a left eye adaptor, you can use the camcorder with your left eye to the viewfinder. For details, contact your Sony dealer.

Adjusting the viewfinder screen

The following adjustments are provided to improve the visibility of the viewfinder screen. Although these adjustments may make the viewfinder image clearer, they have no effect on the output video signal from the camcorder.



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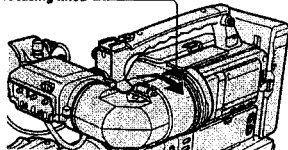
Recording a picture

Eyepiece focus adjustment

Depending on the eyesight of the operator — whether longsighted or shortsighted — the optimal position of the viewfinder image varies. Adjust the eyepiece focus to get the clearest viewfinder image for your eyesight. First focus the image with the lens, then adjust the eyepiece focusing knob. The adjustment range is from -3 to 0 diopters¹⁾ (the default setting is 0 diopters).

1) Diopter: A unit to indicate the degree of convergence or divergence of a bundle of rays.

Eyepiece focusing knob



To modify the adjustment range

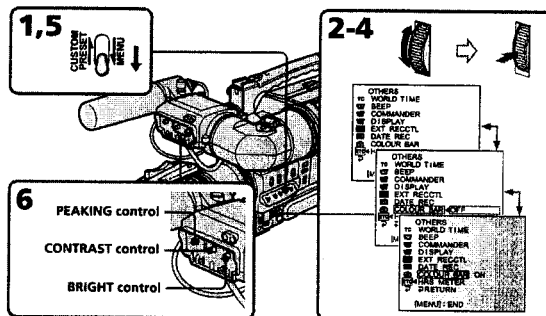
Using an optional part allows you to modify the adjustment range to -2 to +1 diopters or -0.5 to +3 diopters. For details, consult your Sony dealer.

Recording a picture

Contrast and brightness adjustment

Carry out these adjustments with the color bars displayed.

- (1) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu in standby or recording mode.
- (2) Turn the SEL/PUSH EXEC dial to select then press the dial.
- (3) Turn the SEL/PUSH EXEC dial to select COLOUR BAR, then press the dial.
- (4) Turn the SEL/PUSH EXEC dial to select ON, then press the dial.
- (5) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to erase the menu display.
- (6) Watching the color bars, turn the CONTRAST and BRIGHT controls to adjust the contrast and brightness.



Outline emphasis adjustment

Turning the PEAKING control changes the degree of outline emphasis in the viewfinder image, to make focusing easier.

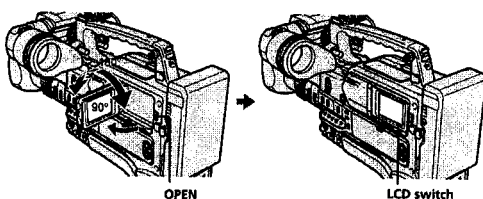
Recording a picture

Using the LCD screen

While sliding OPEN in the direction of the battery pack, then open the LCD panel. The picture being shot is displayed on the LCD screen. To turn off the LCD screen, set the LCD switch to OFF or close the LCD panel with the LCD screen facing toward the camcorder body.

The LCD panel is opened up to 90 degrees and it rotates about 90 degrees to the battery side and about 180 degrees to the lens side.

To close the LCD panel, set it vertically and swing it into the camcorder body until it clicks.



If you turn the LCD panel over so that it faces the other way in standby or recording mode, the indicator appears on the LCD screen and in the viewfinder (Mirror mode).

When you use the LCD screen outdoors in direct sunlight

The LCD screen may be difficult to see. If this happens, we recommend that you use the viewfinder.

When you adjust the angle of the LCD panel

Make sure that the LCD panel is opened up to 90 degrees.

When using both the LCD screen and the viewfinder during shooting

The usable time of the battery pack when using both the LCD screen and the viewfinder will be shorter than when using the viewfinder only.

Pictures in the mirror mode

The picture on the LCD screen is a mirror-image. However, the recording picture will be normal.

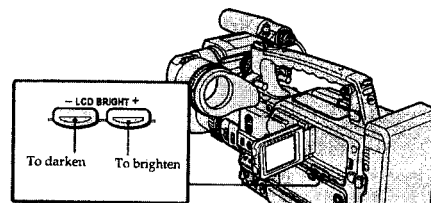
Indicators in the mirror mode

The STBY indicator appears as and REC as . Some of the other indicators appear mirror-reversed and others are not displayed. However, if you close the LCD panel with the LCD screen turned over, indicators appear normally.

Recording a picture

Adjusting the brightness of the LCD screen

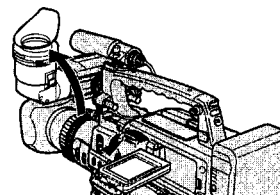
To adjust the brightness of the LCD screen, press LCD BRIGHT + or -.



Even if you do the LCD screen adjustment using the LCD BRIGHT +/- buttons The recorded picture will not be affected.

Recording in a low position

You can record in a low position to get an interesting recording angle. Lift up the viewfinder or rotate the LCD panel with the screen facing up to record from a low position.



Recording a picture

After recording

- (1) Close the LCD panel.
- (2) Eject the cassette.
- (3) Set the POWER switch to OFF.
- (4) Remove the battery pack.

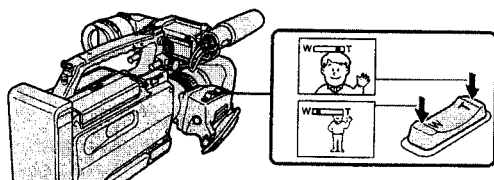
Using the zoom feature

To zoom with the zoom lever

Press the power zoom lever a little for a slower zoom. Press it deeper for a faster zoom. Using the zoom function sparingly results in better-looking recordings.

"T" side: for telephoto (subject appears closer)

"W" side: for wide-angle (subject appears farther away)



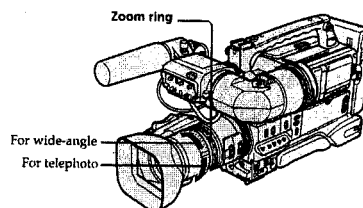
When you shoot close to a subject

If you cannot get a sharp focus, press to "W" side of the power zoom lever until the focus is sharp. You can shoot a subject that is at least about 80 cm (about 2 feet 5/8 inch) away from the lens surface in the telephoto position, or about 1 cm (about 1/2 inch) away in the wide-angle position.

Recording a picture

To zoom with the zoom ring

Using the zoom ring, you can control the zoom by your desired speed and you can make fine adjustments. During recording, turn the zoom ring to the desired speed.



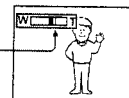
Note

If you turn the zoom ring quickly, the zoom may not respond to the zoom ring adjustment. Rotate the zoom ring with appropriate speed.

Using the digital zoom - Zoom greater than 12x

Zoom greater than 12x is performed digitally, if you set D ZOOM to 24x or 48x in the menu settings. The digital zoom function is set to OFF as a default setting (p. 120). If you use the digital zoom function, the picture quality deteriorates.

The right-ended portion of the bar shows the digital zooming zone. The digital zooming zone appears when you set D ZOOM to 24x or 48x.



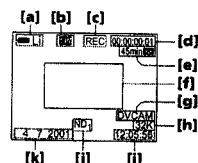
You cannot use the digital zoom:

- When you set PROG. SCAN to ON in the menu settings (p. 120).
- When the MEMORY/CAMERA/VTR selector is set to MEMORY.

Recording a picture

Indicators displayed during recording

The indicators are not recorded on the tapes.



[a] Remaining battery capacity indicator

This appears after you turn on the power and wait for a while. When REMAIN is set to LI-ION in the menu settings, "LI" is indicated, and when it is set to NI-CD, "Ni" is indicated.

[b] Cassette memory indicator

This appears when using a tape with cassette memory.

[c] STBY/REC indicator

[d] Time code/User bits

[e] Remaining tape indicator

This appears after you insert a cassette.

[f] Guide frame

[g] DVCAM format/DV format in SP mode indicator

[h] Audio mode indicator

[i] Time indicator

[j] ND filter indicator

The most suitable mode will flash regardless of the current mode. After you select the appropriate position, it will stop flashing and remain on when the DISPLAY switch located on the front of the viewfinder is set to ON, or it will disappear when the DISPLAY switch is set to OFF.

[k] Date indicator

Time code

The time code indicates the recording or playback time, "00:00:00:00" (hours : minutes : seconds : frames). You cannot rewrite only the time code. You can preset the time code. The time code can be preset or be reset during recording (p. 105).

On user bits display

You can display the user bits by setting the DISPLAY SELECT switch to U-BIT (p. 109).

Remaining tape indicator

The indicator may not be displayed accurately depending on the tape.

Note on the date/time indicator

Recording date/time is not displayed during shooting, however, it is automatically recorded on the tape. You can check the recording date/time during playback by pressing DATA CODE. When you want to display the date and time during shooting, set DATE REC to ON in the menu settings. However, once you record with the date and time, you cannot erase them.

Recording a picture

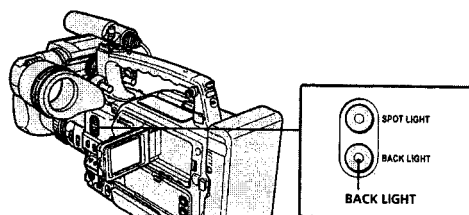
On remaining battery capacity indicator

The camcorder cannot detect the type of the battery pack automatically. According to your battery pack, set up the REMAIN item properly (p. 10). A wrong setup does not indicate the correct battery capacity.

Shooting backlit subjects (BACK LIGHT)

When you shoot a subject with the light source behind the subject or a subject with a light background, use the backlight function.

Press BACK LIGHT in standby, recording, or memory mode. The indicator appears on the LCD screen or in the viewfinder. To cancel, press BACK LIGHT again.



If you press SPOT LIGHT when using the backlight function

The backlight function will be canceled and the spot light function will be enabled.

When you manually adjust two or more functions from the following: iris, gain, and shutter speed

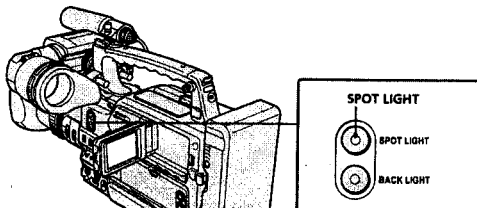
You cannot use the backlight function.

Recording a picture

Spot light

This function prevents people's faces, for example, from appearing excessively white when shooting subjects lit by strong light, such as in the theater.

Press SPOT LIGHT in standby, recording, or memory mode.
The  indicator appears on the LCD screen or in the viewfinder.
To cancel, press SPOT LIGHT again.



If you press BACK LIGHT when using the spot light function

The spot light function will be canceled and the backlight function will be enabled.

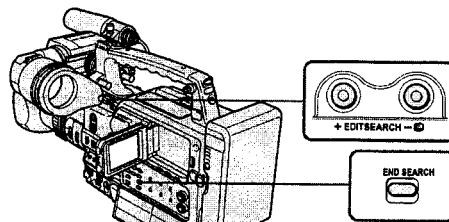
You cannot use the spotlight mode while in the following settings:

- Old movie
- Shutter speed value of 1/25 or smaller
- When you manually adjust two or more functions from the following: iris, gain, and shutter speed

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Checking the recording - END SEARCH / EDITSEARCH / Rec Review

You can use these buttons to check the last recorded picture or shoot so that the transition between the last recorded scene and the next scene you record is smooth.



Searching the end point of the recording — END SEARCH

You can easily go to the end of the last recorded portion.

Press END SEARCH in standby mode.

The camcorder rewinds or fast-forwards the tape and the last five-second recorded picture is played back. After playback the camcorder turns to standby mode. You can monitor the sound from the speaker or headphones.

Changing the next recording start point — EDITSEARCH

You can change the next recording start point in standby mode.

Hold down the +/- side of EDITSEARCH in standby mode. The recorded picture is played back.

+/-: to go forward

=/: to go backward

Release EDITSEARCH to stop playback. If you press START/STOP, re-recording begins from the point you released EDITSEARCH. You cannot monitor the sound.

Checking the last recorded picture — Rec Review

You can check the last recorded portion.

Press the  side of EDITSEARCH momentarily in standby mode.

The last few-seconds of picture is played back and the camcorder returns to standby. You can monitor the sound from the speaker or headphones.

End search function

When you use a tape without cassette memory, the end search function does not work once you eject the cassette after you record on the tape. If you use a tape with cassette memory, the end search function works even once you eject the cassette.

If there is a blank portion at the beginning or between the recorded portions, the end search function may not work correctly (p. 158).

Recording - Basics

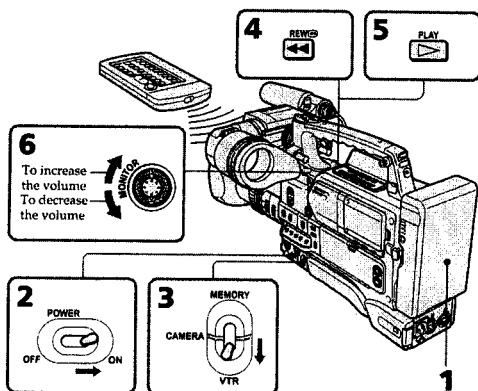
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— Playback - Basics —

Playing back a tape

You can monitor the playback picture on the LCD screen or in the viewfinder. You can also control playback using the Remote Commander supplied with your camcorder.

- (1) Install the power source.
- (2) Set the POWER switch to ON and insert the recorded tape.
- (3) Set the MEMORY/CAMERA/VTR selector to VTR.
- (4) Press  to rewind the tape.
- (5) Press  to start playback.
- (6) To adjust the volume, turn the MONITOR knob.



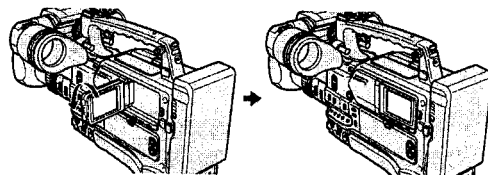
To stop playback
Press .

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Playing back a tape

When monitoring on the LCD screen

You can turn the LCD panel over and move it back to the camcorder body with the LCD screen facing out.



To select the audio output channel via the speaker or PHONES jack

Select the channels using the AUDIO MONITOR selector.

CH-1: Channel 1 audio

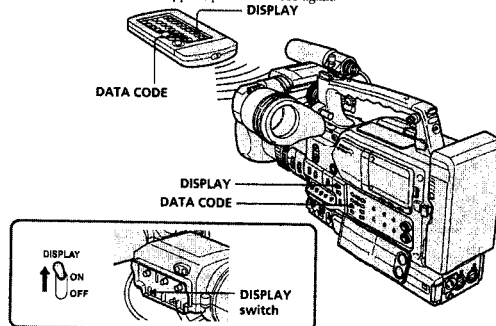
MIX: Mixed audio (channels 1 and 2)

CH-2: Channel 2 audio

To control the display of the screen indicators

- (1) Set the DISPLAY switch located on the front of the viewfinder to ON. If the switch is not set to ON, the DISPLAY button does not function.
- (2) Press DISPLAY on the camcorder or on the Remote Commander supplied with your camcorder.

The indicators appear on the LCD screen or in the viewfinder.
To make the indicators disappear, press DISPLAY again.



Playback - Basics

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Playing back a tape

Using the data code function

Your camcorder automatically records not only images on the tape but also the recording data (date/time or various settings when recorded) (**Data code**).

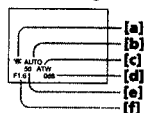
Press DATA CODE on the camcorder or on the Remote Commander supplied with your camcorder in playback mode.

The display changes as follows:
date/time → various settings (SteadyShot OFF, white balance, gain, shutter speed, aperture value, exposure mode) → no indicator

Date/time



Various settings



- [a] SteadyShot OFF indicator
- [b] Exposure mode indicator
- [c] White balance indicator
- [d] Gain indicator
- [e] Shutter speed indicator
- [f] Aperture value

To not display the various settings

Set DATA CODE to DATE in the menu settings (p. 120).
The display changes as follows:
date/time → no indicator

Recording data

Recording data is your camcorder's information when you have recorded something. In CAMERA mode, the recording data will not be displayed.

When you use the data code function, "-- --" (date) or "-- : --" (time) appears if:

- A blank portion of the tape is being played back.
- The tape is unreadable due to tape damage or noise.
- The tape was recorded by the camcorder without the date and time set.

Data code

When you connect your camcorder to a monitor, the data code also appears on the monitor screen (p. 33).

Note on the date/time indicator

Recording date/time is not displayed during shooting, however, it is automatically recorded on the tape. You can check the recording date/time during playback by pressing DATA CODE. When you want to display the date and time during shooting, set DATE REC to ON in the menu settings. However, once you record with the date and time, you cannot erase them.

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Playing back a tape

When you play back a tape in reverse

Horizontal noise may appear at the center, or the top and bottom of the screen. This is not a malfunction.

Note on DV-formatted tapes

You can play back DV-formatted tapes on this camcorder if the tape is recorded in SP mode. "DV SP" appears on the LCD screen or in the viewfinder during playback. You cannot play back DV-formatted tapes recorded in LP mode.

Playing back a tape

If the aperture adjustment is set to minimum

"CLOSE" is displayed at the location of the aperture value.

Various playback modes

To operate video control buttons, set the MEMORY/CAMERA/VTR selector to VTR.

To view a still picture (playback pause)

Press II during playback. To resume normal playback, press ► or II.

To advance the tape

Press ►► in stop mode. To resume normal playback, press ►.

To rewind the tape

Press ◀◀ in stop mode. To resume normal playback, press ►.

To change the playback direction

Press ◀ during playback to reverse the playback direction. To resume normal playback, press ►.

To locate a scene monitoring the picture (picture search)

Keep pressing ◀◀ or ►► during playback. To resume normal playback, release the button.

To monitor the picture at high-speed while advancing or rewinding the tape (skip scan)

Keep pressing ◀◀ while rewinding or ►► while advancing the tape until the picture appears on the LCD screen or in the viewfinder. To resume rewinding or advancing, release the button.

To view the picture at slow speed (slow playback)

Press II► during playback. For slow playback in the reverse direction, press ◀, then press II◀. To resume normal playback, press ►.

To view the picture at double speed

Press x2 on the Remote Commander during playback. For double speed playback in the reverse direction, press ◀, then press x2 on the Remote Commander. To resume normal playback, press ►.

To view the picture frame-by-frame

Press ► in playback pause mode. For frame-by-frame playback in the reverse direction, press ◀. To resume normal playback, press ►.

To search the last scene recorded (END SEARCH)

Press END SEARCH in stop mode. The last five seconds of the recorded portion plays back and stops.

In various playback modes

- Sound is muted.
- The previous picture may remain as a mosaic image during playback.

When the playback pause mode lasts for five minutes

Your camcorder automatically enters the stop mode. To resume playback, press ►.

Slow playback

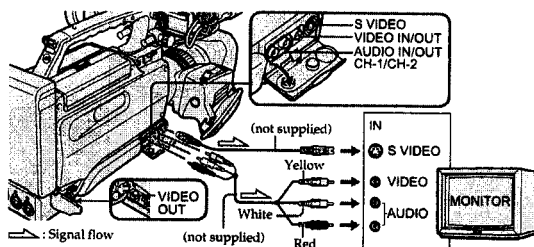
Slow playback can be performed smoothly on your camcorder, however, this function does not work for a signal output through the i DV IN/OUT connector.

Playback - Basics

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Viewing the recording on a monitor

Connect your camcorder to your monitor or VCR with the A/V connecting cable to watch the playback picture on the monitor screen. You can operate the video control buttons in the same way as when you monitor playback pictures on the LCD screen. Refer to the operating instructions of your monitor or VCR.



Playback - Basics

If your monitor is connected to a VCR

Connect your camcorder to the line input on the VCR by using the A/V connecting cable. Set the input selector on the monitor to LINE.

If your monitor or VCR is a monaural type

Connect with the monitor or VCR using the audio cable (monaural ↔ stereo) (not supplied).

If your monitor or VCR has a BNC-type connector for video input

Connect it to the VIDEO OUT connector on the side of the camcorder using a cable with BNC connectors. In this connection, you need not connect the S video cable nor the yellow (video) plug of the A/V connecting cable.

If your monitor or VCR has an S video jack

Connect using an S video cable (not supplied) to obtain high-quality pictures. With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable. Connect the S video cable (not supplied) to the S video jacks on both your camcorder and the monitor or the VCR. This connection produces higher quality DVCAM/DV format pictures.

When you adjust the monitor screen

Set the MEMORY/CAMERA/VTR selector to CAMERA, and set COLOUR BAR to ON in the menu settings (p. 120). The colour bars are displayed on the monitor screen.

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Shooting with manual adjustment

Under normal conditions, this unit automatically makes various adjustments as it shoots. However, you can adjust the following functions manually to suit your preference.

Functions you can adjust by setting the AUTO MODE switch to OFF
Iris, gain, shutter speed, and white balance

Functions you can adjust in menu settings
Deactivating the SteadyShot

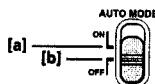
Functions you can adjust by using other selectors/rings
ND filter, zebra pattern, focus, AE shift, and zoom

The following describes how to adjust all the functions mentioned above except ND filter (p. 17), zoom (p. 24), focus (p. 45), and white balance (p. 47).

AUTO MODE switch

ON [a]

Select this position to let the unit adjust the iris, gain, shutter speed, and white balance automatically.



OFF [b]

Select this position to adjust the iris, gain, shutter speed, or white balance manually.

Notes

- When you manually adjust two or more functions from the following during backlight or spot light mode: iris, gain, and shutter speed, the backlight or spot light function will be automatically cancelled.
- The functions (iris, gain, and shutter speed) that are not adjusted manually will be automatically adjusted according to shooting conditions.

Shooting with manual adjustment

Adjusting the iris

Adjust the iris manually under the following cases.



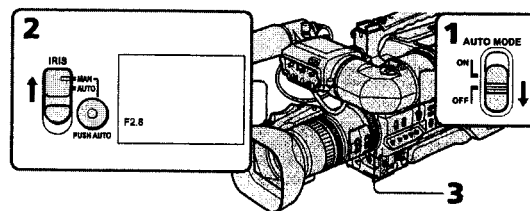
[a]

- The background is too bright (back lighting)
- Insufficient light: most of the picture is dark

[b]

- Bright subject and dark background
- To record the darkness faithfully

- Set the AUTO MODE switch to OFF while the camcorder is in standby, recording, or memory mode.
- Set the IRIS switch to MAN. The iris indicator appears on the LCD screen or in the viewfinder.
- Turn the IRIS ring to adjust the iris.
As you turn the ring, the F value changes as follows:
F1.6 ↔ ... ↔ F11 ↔ CLOSE.
For a smaller aperture, select a higher value. The gain and shutter speed change in accordance with the selected F value.



To return to automatic iris mode

Set the IRIS switch to AUTO or set the AUTO MODE switch to ON. The iris indicator disappears from the LCD or viewfinder screen. However, when you set the AUTO MODE switch to ON, other manual adjustments (gain, shutter speed, and white balance) will be also cancelled.

Shooting with manual adjustment

To shoot with automatic iris adjustment momentarily

Press IRIS PUSH AUTO. The automatic adjustment functions while you are pressing IRIS PUSH AUTO. When you release IRIS PUSH AUTO, the manual adjustment resumes.

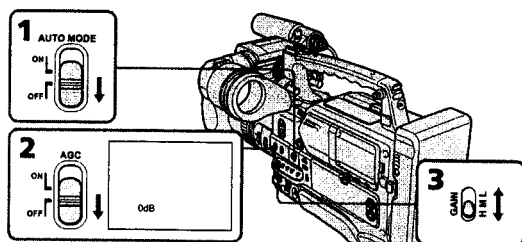
About the depth of field

The depth of field is the in-focus range, measured from the distance behind a subject to the distance in front. The depth of field can vary with the iris (F value) and the focal length. Lowering the F value (large iris) reduces the depth of field. Raising the F value (small iris) provides a larger depth of field. Zooming in telephoto position offers a smaller depth of field while the depth of field in the wide-angle position is greater.

The depth of field	Shallow	Deep
Iris	Near open (Low F value)	Near close (High F value)
Zoom	Telephoto (T)	Wide (W)

Adjusting the gain

- Set the AUTO MODE switch to OFF while the camcorder is in standby, recording, or memory mode.
- Set the AGC switch to OFF. The gain indicator appears on the LCD screen or in the viewfinder.
- Switch the GAIN selector to select the desired gain value.
The gain value can be selected between three positions (H/M/L) and each value is select from 0 dB, 3 dB, 6 dB, 9 dB, 12 dB, 15 dB and 18 dB in 3 dB steps using the GAIN LEVEL item in the menu settings. The default setting is as follows: 18 dB (H), 9 dB (M), and 0 dB (L).



To return to automatic gain mode

Set the AGC switch to ON or set the AUTO MODE switch to ON. The gain indicator disappears from the LCD or viewfinder screen. However, when you set the AUTO MODE switch to ON, other manual adjustments (iris, shutter speed, and white balance) will be also cancelled.

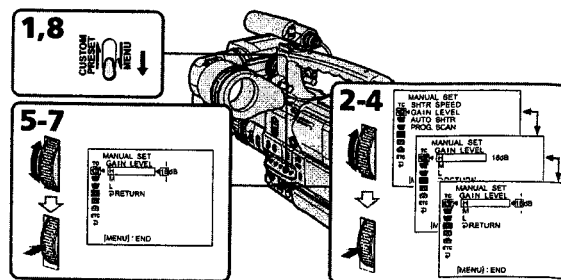
Shooting with manual adjustment

When the gain value is 3 dB or higher

The GAIN UP lamp (orange) in the viewfinder lights.

Setting the gain values for the positions of the GAIN selector

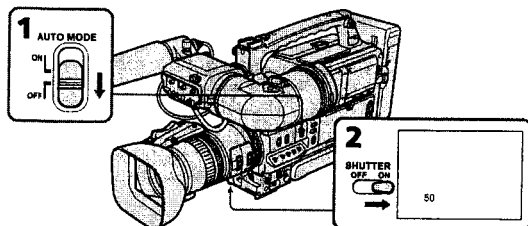
- Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu in standby, recording, or memory mode.
- Turn the SEL/PUSH EXEC dial to select GAIN LEVEL, then press the dial.
- Turn the SEL/PUSH EXEC dial to select H, then press the dial.
- Turn the SEL/PUSH EXEC dial to select L, then press the dial.
- Turn the SEL/PUSH EXEC dial to adjust the gain value for the H position. The value changes between 0 dB and 18 dB.
- Press the SEL/PUSH EXEC dial.
- Repeat steps 4 to 6 to adjust the gain values for the M and L positions.
- Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to erase the menu display.



Shooting with manual adjustment

Adjusting the shutter speed

- (1) Set the AUTO MODE switch to OFF while the camcorder is in standby, recording, or memory mode.
- (2) Set the SHUTTER switch to ON. The shutter speed set by the SHTR SPEED item in the menu settings will be indicated on the LCD screen or in the viewfinder.



To return to automatic shutter speed mode

Set the SHUTTER switch to OFF or set the AUTO MODE switch to ON. The shutter speed indicator disappears from the LCD or viewfinder screen. However, when you set the AUTO MODE switch to ON, other manual adjustments (iris, gain, and white balance) will be also cancelled.

When you select the shutter speed values other than 1/50
The SHUTTER lamp (red) in the viewfinder lights.

When shooting at slow shutter speed

At slow shutter speed, automatic focus may be lost. Adjust the focus manually using a tripod.

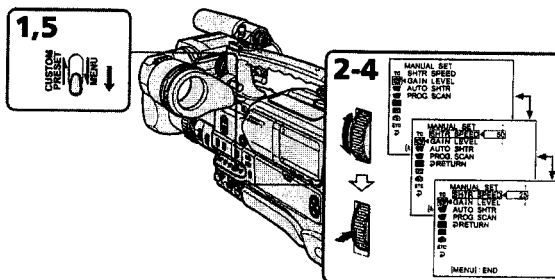
When shooting under fluorescent light or light bulbs

When shooting under fluorescent light or light bulbs, a rare phenomenon may happen in which the screen lights up brightly depending on the shutter speed (Flicker phenomenon).

Shooting with manual adjustment

Adjusting the shutter speed value

- (1) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu in standby, recording, or memory mode.
- (2) Turn the SEL/PUSH EXEC dial to select , then press the dial.
- (3) Turn the SEL/PUSH EXEC dial to select SHTR SPEED, then press the dial.
- (4) Turn the SEL/PUSH EXEC dial to select the desired speed. As you turn the dial, the shutter speed changes as follows:
1/3 ↔ 1/6 ↔ 1/12 ↔ ... ↔ 1/3500 ↔ 1/6000 ↔ 1/10000
To increase the shutter speed, select a smaller setting (large value indicator on the LCD screen or in the viewfinder).
- (5) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to erase the menu display.



When you set the shutter speed value to 1/25 or smaller

You cannot use the spot light (p. 28) and digital effect (p. 69) functions.

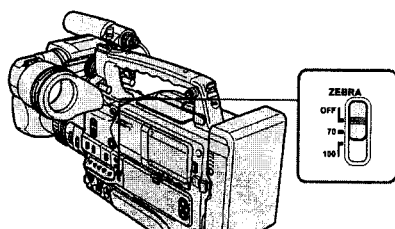
Advanced Recording Operations

Shooting with manual adjustment

Shooting with the zebra pattern

You can set the camcorder to display a zebra pattern (diagonal stripes) in the portion of the picture on the LCD screen or in the viewfinder with a subject whose brightness exceeds a certain level. The portion of the picture where zebra pattern appears is an area of high brightness and overexposure (when the ZEBRA selector is set to "100"). You can check the picture level of a subject by displaying the zebra pattern. Use the zebra pattern as a guide for adjusting the exposure and shutter speed so that you can get the desired picture.

Set the ZEBRA selector to 70 or 100 in standby or memory mode.



Setting	Meaning
70	The zebra pattern appears in the portion of the picture on the LCD screen or in the viewfinder with a subject whose brightness is about 70%.
100	The zebra pattern appears in the portion of the picture on the LCD screen or in the viewfinder with a subject whose brightness exceeds more than 100%.
OFF	The zebra pattern does not appear on the LCD screen or in the viewfinder.

To erase the zebra pattern

Set the ZEBRA selector to OFF.

Note on shooting with the zebra pattern

Even though you see the zebra pattern on the LCD screen or in the viewfinder, the zebra pattern is not recorded.

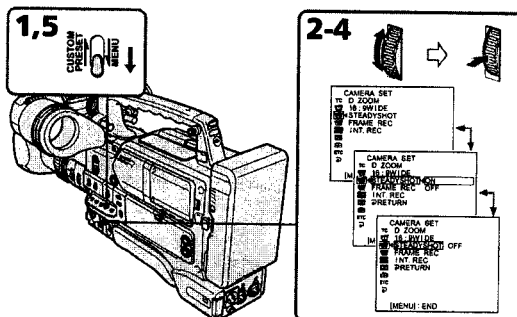
Shooting with manual adjustment

Releasing the SteadyShot function

When the SteadyShot function is working, the camcorder compensates for camera-shake.

You can release the SteadyShot function when you do not need to use it. The indicator appears on the LCD screen or in the viewfinder. Do not use the SteadyShot function when shooting a stationary object with a tripod.

- (1) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu in standby or memory mode.
- (2) Turn the SEL/PUSH EXEC dial to select , then press the dial.
- (3) Turn the SEL/PUSH EXEC dial to select STEADYSHOT, then press the dial.
- (4) Turn the SEL/PUSH EXEC dial to select OFF, then press the dial.
- (5) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to erase the menu display.



To activate the SteadyShot function again

Select ON in step 4, then press the SEL/PUSH EXEC dial.

Notes on the SteadyShot function

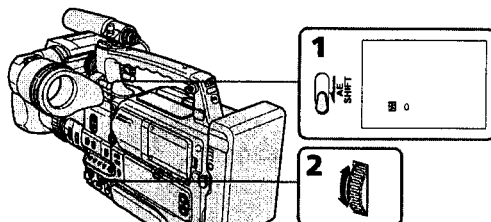
- The SteadyShot function will not correct excessive camera-shake.
- If you use a tele conversion lens (not supplied) or a wide conversion lens (not supplied), these lens may influence the SteadyShot function.

Advanced Recording Operations

Shooting with manual adjustment

Adjusting the AE shift

- You can adjust the AE shift in accordance with shooting conditions and a subject.
- (1) Push the AE SHIFT switch in the direction of the arrow and release it in standby, recording, or memory mode. The AE shift indicator appears on the LCD screen or in the viewfinder.
 - (2) Turn the SEL/PUSH EXEC dial to adjust the brightness.



To deactivate AE shift

Set the AE shift value to 0, or push the AE SHIFT switch in the direction of the arrow and release it again.

When you adjust AE shift

The -4 to +4 indicator is displayed on the LCD screen or in the viewfinder. The number varies corresponding to the AE shift level.

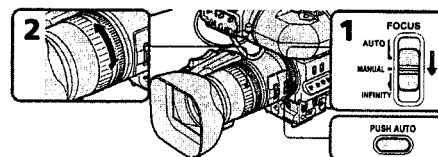
Focusing manually

You can gain better results by manually adjusting the focus in the following cases:

- The autofocus mode is not effective when shooting
 - subjects through glass coated with water droplets
 - horizontal stripes
- subjects with little contrast with backgrounds such as walls and sky
- When you want to change the focus from a subject in the foreground to a subject in the background
- Shooting a stationary subject when using a tripod



- (1) Slide FOCUS down to MANUAL. The ∞ indicator appears on the LCD screen or in the viewfinder in recording, standby, or memory mode.
- (2) Turn the focus ring to sharpen the focus.



To return to the autofocus mode

Slide FOCUS up to AUTO to turn off the ∞ or Δ indicator.

To focus in infinity

Slide FOCUS to INFINITY. The Δ indicator appears on the LCD screen or in the viewfinder. This function is useful when the nearer subject is focused automatically, even though you want to focus on a faraway subject.

To shoot with auto focusing momentarily

Press FOCUS PUSH AUTO. The auto focus functions while you are pressing FOCUS PUSH AUTO.

Use this button to focus on one subject and then another with smooth focusing. When you release FOCUS PUSH AUTO, manual focusing resumes.

Focusing manually

To obtain the correct focus

First, focus on a subject manually with the zoom set toward the "T" (telephoto) side, then adjust the zoom by pressing the "W" side of the lever gradually.

When you shoot close to the subject

Focus at the end of the "W" (wide-angle) position.

∞ changes as follows:

- Δ when recording a distant subject.
- ∞ when the subject is too close to focus on.

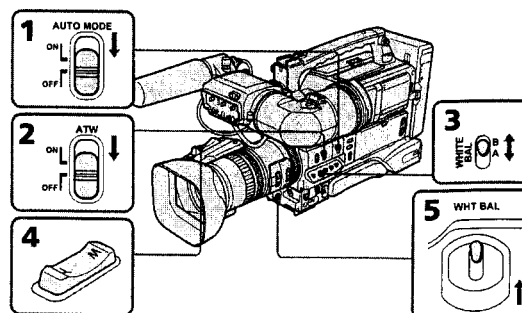
Adjusting the white balance

White balance adjustment makes white subjects look white and allows more natural colour balance for camera recording. Normally, white balance is automatically adjusted. You can obtain better results by adjusting the white balance manually when lighting conditions change quickly or when recording outdoors, e.g., neon signs, fireworks.

Saving an appropriate white balance value in memory

You can save two white balance values in separate memories, A and B. Unless changed, the saved values are retained for approximately four months, even when the power supply is detached from the camcorder. Once a value is saved, you can automatically restore the adjustment by setting the WHITE BAL switch to the A or B position. This makes shooting under alternating lighting conditions easy.

- (1) Set the AUTO MODE switch to OFF while the camcorder is in standby, recording, or memory mode.
 - (2) Set the ATW switch to OFF.
 - (3) Set the WHITE BAL switch to A or B.
 - (4) Arrange a white subject (paper, cloth, etc.) under the same lighting conditions as for shooting, and zoom in on it so that as far as possible the whole screen is white.
 - (5) Push the WHT BAL switch upward and release it.
- The white balance adjustment is carried out. The Δ or ∞ indicator flashes quickly. When the white balance has been adjusted and stored in the memory, the indicator stops flashing. The adjustment value is automatically saved in memory A or B as selected above.
- To save the white balance adjustment for different lighting conditions, repeat steps 2 to 4 above. You can save two different values for the white balance, in memories A and B.



Adjusting the white balance

To recall a white balance value from memory

Before beginning shooting, set the WHITE BAL switch to the A or B position. This automatically sets the camcorder to the white balance adjustment saved in the corresponding memory.

Shooting when lighting conditions have changed

- When lighting conditions have changed, readjust the white balance while the camcorder is in standby mode.
- In automatic white balance mode, point your camcorder at a white subject for about 10 seconds after setting the MEMORY/CAMERA/VTR selector to CAMERA to get a better adjustment when:
 - You detach the battery for replacement.
 - You bring your camcorder outdoors from the interior of a house, or vice versa.

If the **5800K** or **3200K** indicator does not stop flashing in step 5

The white balance cannot be set. Use the automatic white balance mode.

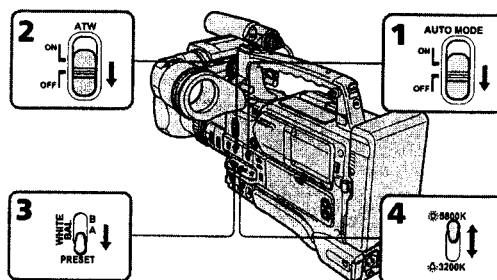
Using the preset white balance settings

The camcorder provides preset white balance settings, for instant shooting with approximately the correct adjustment. There are also particular shooting conditions under which the preset values may give better results than the human eye adjustment.

Adjusting the white balance

- (1) Set the AUTO MODE switch to OFF while the camcorder is in standby, recording, or memory mode.
- (2) Set the ATW switch to OFF.
- (3) Set the WHITE BAL switch to PRESET.
- (4) Set the position as follows with the WHT PRESET switch.

Position	Shooting conditions
5800K (Outdoor)	• Recording a sunset/sunrise, just after sunset, just before sunrise, neon signs, or fireworks • Under a colour matching fluorescent lamp
3200K (Indoor)	• Lighting condition changes quickly • Too bright a place such as a photography studio • Under sodium lamps or mercury lamps



To return to automatic adjustment

Set the ATW switch to ON or set the AUTO MODE switch to ON. However, when you set the AUTO MODE switch to ON, other manual adjustment (iris, gain, and shutter speed) will be also cancelled.

Notes on white balance

- When you shoot with studio lighting or video lighting, use the 3200K (indoor) mode.
- When you select the 3200K position, you cannot properly adjust the white balance, even if you shoot with fluorescent lighting. In such cases, readjust it manually or shoot in automatic white balance mode.

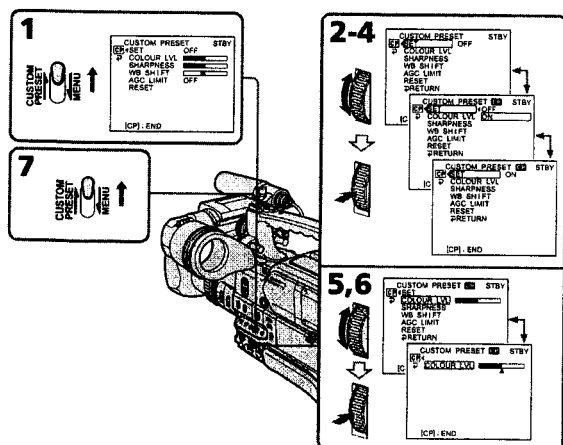
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Presetting the adjustment for picture quality - Custom preset

You can preset the camcorder to record the picture with the desired picture quality. When you preset, we recommend that you check the picture quality by displaying the picture onto the monitor screen, which is connected to the camcorder.

- (1) Turn the CUSTOM PRESET/MENU switch in the CUSTOM PRESET direction and release it to display the CUSTOM PRESET menu in standby or memory mode.
- (2) Press the SEL/PUSH EXEC dial.
- (3) Turn the SEL/PUSH EXEC dial to select SET, then press the dial.
- (4) Turn the SEL/PUSH EXEC dial to select ON, then press the dial.
- (5) Turn the SEL/PUSH EXEC dial to select the desired item, then press the dial.
- (6) Turn the SEL/PUSH EXEC dial to adjust the selected item, then press the dial.
- (7) Turn the CUSTOM PRESET/MENU switch in the CUSTOM PRESET direction and release it. The CUSTOM PRESET menu disappears and the indicator **ICP** appears on the LCD screen or in the viewfinder.



Presetting the adjustment for picture quality - Custom preset

Items to be adjusted

Item	Meaning	Adjustment value
COLOUR LVL	Colour intensity	Decreases colour intensity ← Increases colour intensity →
SHARPNESS	Sharpness	Softer ← Sharper →
WB SHIFT	White balance	Bluish ← Reddish →
AGC LIMIT	Auto Gain-limit	6 dB/12 dB/OFF
RESET	Sets items above to the default settings.	

To cancel using the custom preset

Select OFF in step 4, then press the SEL/PUSH EXEC dial.

To return to the standard setting

Select OK from the RESET item in step 5, then press the SEL/PUSH EXEC dial. To cancel, select RETURN, then press the SEL/PUSH EXEC dial.

To check the custom preset setting

Push the CUSTOM PRESET/MENU switch in the CUSTOM PRESET direction and release it while the camcorder is in standby, recording, or memory mode. The custom preset setting appears on the LCD screen or in the viewfinder.

About the AGC limit

When adjusting the gain manually, the level of the gain is up to 18 dB (OFF).

When you preset the desired picture quality in CAMERA or memory mode

The preset is only available in each mode you preset. If you want to use a preset both in CAMERA and memory modes, you have to preset in each mode.

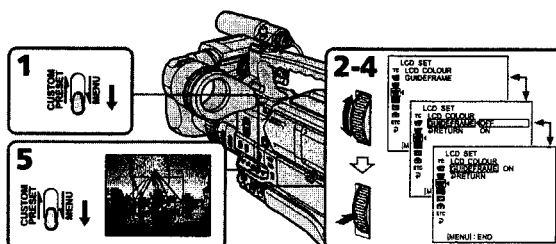
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Using the guide frame

You can easily make the picture be on a horizontal or vertical line using the guide frame. The guide frame is not recorded.

- (1) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu in standby mode.
- (2) Turn the SEL/PUSH EXEC dial to select then press the dial.
- (3) Turn the SEL/PUSH EXEC dial to select GUIDEFRAME, then press the dial.
- (4) Turn the SEL/PUSH EXEC dial to select ON, then press the dial.
- (5) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to erase the menu display. The guide frame is displayed on the LCD screen or in the viewfinder.



To clear the guide frame

- Select OFF in step 4, then press the SEL/PUSH EXEC dial.
- Simply press DISPLAY or set the DISPLAY switch located on the front of the viewfinder to OFF.

Note

The guide frame indicates only a rough level. The size and position of the guide frame do not affect the setting of the camcorder.

If you set GUIDEFRAME to ON

The screen indicators other than the guide frame are also displayed on the LCD screen or in the viewfinder.

When the DISPLAY switch located on the front of the viewfinder is set to OFF
The guide frame will not be displayed.

Marking an Index

If you mark an index at the scene you want to search for, you can easily search for the scene later (p. 77).

In recording mode [a]:

Press INDEX MARK.

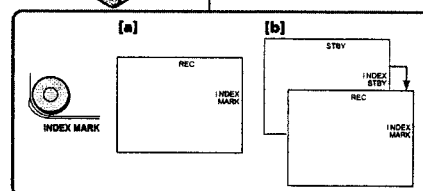
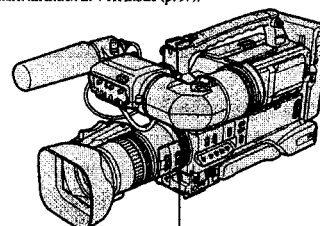
The "INDEX MARK" indicator appears on the LCD screen or in the viewfinder for seven seconds and after the indicator disappears, the index marking is complete.

In standby mode [b]:

Press INDEX MARK.

The "INDEX STBY" indicator appears on the LCD screen or in the viewfinder. And when you press START/STOP to start recording, the "INDEX STBY" indicator changes to "INDEX MARK" and after the indicator disappears, the index marking is complete. The camcorder starts index-marking at the 11th frame from the recording start point. A index signal will be recorded on cassette memory about 0.3 sec, and on a tape about five seconds.

You can mark an index in VTR mode (p. 97).



To cancel index marking

Press INDEX MARK again in standby mode.

Notes on the index

- Index marks are recorded during recording, you cannot mark an index after recording.
- Index signals will be recorded both on the tape and on cassette memory. If you use cassettes without cassette memory or the cassette memory is full, the signals will be recorded only on the tape.
- When you record over the recorded tape and mark an index on the tape, we recommend that you clear all data in the cassette memory before marking an index.

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Adjusting the recording level manually - Sound recording level

You can adjust the recording sound level. We recommend that you check the recording level before recording. You can adjust the channel 1 and channel 2 separately.

- (1) Select the audio input using the AUDIO INPUT (CH-1/CH-2) switches.

To select the audio input for channel 1, use the AUDIO INPUT (CH-1) switch, and for channel 2, use the AUDIO INPUT (CH-2) switch.

FRONT: Inputs from the MIC IN +48V connector

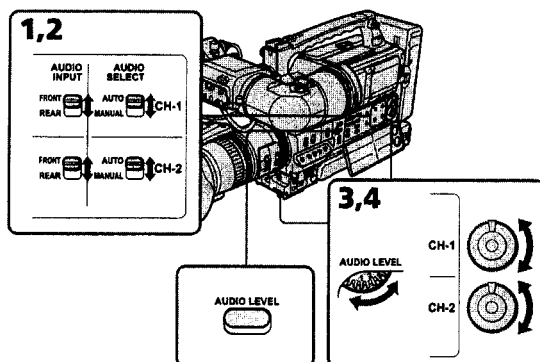
REAR: Inputs from the AUDIO IN CH1/CH2 connectors

- (2) Select the channel to be adjusted manually using the AUDIO SELECT (CH-1/CH-2) switches.

AUTO: Adjusts the recording level automatically

MANUAL: Adjusts the recording level manually

- (3) Adjust the recording level for each channel using the AUDIO LEVEL knobs. Use the audio level meters at the lower on the LCD screen or in the viewfinder for adjustment.



To adjust the recording level automatically

Set the AUDIO SELECT (CH-1) switch to AUTO for channel 1, and set the AUDIO SELECT (CH-2) switch to AUTO for channel 2.

To display the audio level meters

Press AUDIO LEVEL.

The sound input through the AUDIO IN/OUT CH-1/CH-2 jacks or 1 DV IN/OUT connector

You cannot adjust the recording level.

Adjusting the recording level manually- Sound recording level

Notes on the recording level of the channel 1

- You can adjust the level from both the MIC IN +48V and AUDIO IN CH1 connectors.
- You can also adjust the level using the AUDIO LEVEL knob located on the front, however, when the AUDIO LEVEL knob located on the side panel is near minimum level, you cannot turn up the volume using the AUDIO LEVEL knob located on the front.

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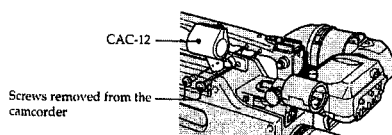
55

Connecting an optional external microphone

You can also use an external 48-V microphone by connecting it to the MIC IN +48V connector. (The optional CAC-12 Microphone Holder is required.)

Installing the optional CAC-12 Microphone Holder

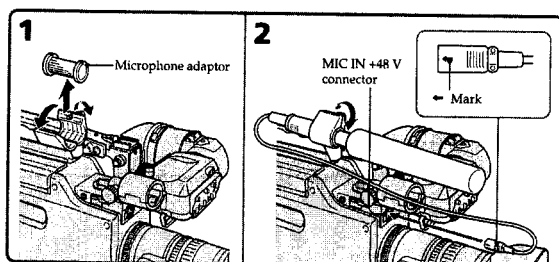
Remove the two retaining screws (M3 × 8) for the optional microphone holder, then use these screws to attach the CAC-12 Microphone Holder.



Fitting an optional microphone

Use the following procedure to attach an optional ECM-670 Microphone.

- (1) Loosen the screw of the CAC-12 Microphone Holder, then open the holder and replace the microphone adaptor with the one supplied with the ECM-670 Microphone.
- (2) Insert the microphone in the microphone holder, close the holder, and tighten the screw. Connect the microphone cable to the MIC IN +48 V connector.



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Using an external audio system or microphone

Connect an audio mixer or other external audio system component to the AUDIO IN CH1/CH2 connectors.

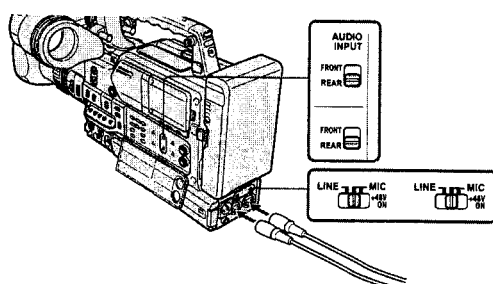
- (1) Connect an audio mixer or other external audio system component to the AUDIO IN CH1/CH2 connector.
- (2) Set the AUDIO INPUT switch that corresponds to the channel that the cable is connected to REAR.
- (3) Set up the following.

When connecting a microphone:

Set the LINE/MIC selector that corresponds to the channel that the cable is connected to MIC. If the microphone is powered through its cable, set it to +48V ON.

When connecting audio equipment:

Set the LINE/MIC selector that corresponds to the channel that the cable is connected to LINE.



Note

If you use other than the 48-V microphone with the LINE/MIC selector set to +48V ON, a malfunction of the microphone may occur.

When you unplug the microphone plug

Unplug it while pressing the PUSH button.

When the external unit is compatible with 12-V power

The camcorder can supply 12-V power to the unit from the DC OUT 12V connector.

Connecting an optional external microphone

To fit optional microphones (operable with a 48 V supply) other than the ECM-670

Use the same fitting procedure as for the ECM-670, but note the following differences with respect to the microphone adaptor.

ECM-672: no microphone adaptor required.

Slender microphones (19 mm (3/4 inch) diameter): use the microphone adaptor supplied with the CAC-12.

Note

When you use an external microphone, make sure that the wind screen does not appear on the screen, using an underscan monitor.

When you unplug the microphone plug

Unplug it while pressing the PUSH button.

When using a microphone which is not powered through its cable

Connect the microphone to the AUDIO IN CH1/CH2 connector and set the LINE/MIC selector to MIC.

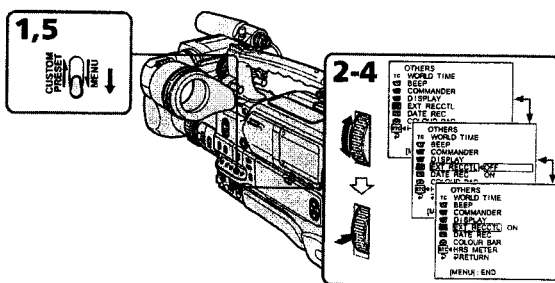
Advanced Recording Operations

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Backing up recordings to another tape

You can easily make backup copies of recordings to the VCR connected to your camcorder with the DV connecting cable (i.LINK cable). Setting EXT RECCTL in the menu settings to ON synchronizes the recording start/pause operation of the external VCR with the START/STOP button on your camcorder.

- (1) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu in standby mode.
- (2) Turn the SEL/PUSH EXEC dial to select **EXT RECCTL**, then press the dial.
- (3) Turn the SEL/PUSH EXEC dial to select **EXT RECCTL**, then press the dial.
- (4) Turn the SEL/PUSH EXEC dial to select **ON**, then press the dial.
- (5) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to erase the menu display.



Advanced Recording Operations

To cancel recording start/pause synchronization

Select OFF in step 4, then press the SEL/PUSH EXEC dial.

Note on the external VCR

We recommend that you turn the external VCR to recording/pause before recording.

When you use one of the following functions, you cannot make backup copies to a VCR

- Tape Photo recording
- Interval recording
- Cut recording

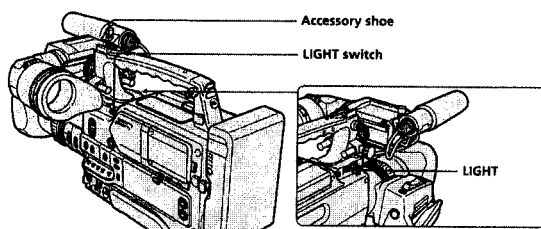
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Using a video light

You can use the Anton Bauer Ultralight 2 or equivalent. Use a video light powered by 12 V with maximum power consumption of 30 W.

- The maximum power consumption of 30 W.
- If you connect the video light to the LIGHT connector on the camcorder and set the LIGHT switch to AUTO, you can turn the light on and off automatically as you start and stop the recording.
- The output of the LIGHT connector on the camcorder is controlled to 12 V even when the camcorder is supplied with 12 V or more power (through the DC IN 12V connector or battery pack). The brightness or colour temperature of the light will not change according to voltage increase.



- (1) Attach a video light to the accessory shoe on the handle and connect the plug of the video light to the LIGHT connector.
- (2) Set the LIGHT switch as follows to control the video light:
AUTO: Turns on the video light during recording if the power switch on the video light is set to on.
MAN: Allows the power switch on the video light to turn the light on and off.

Notes

- Do not use a video light with power consumption of over 30 W.
- The brightness or colour temperature of the light will change when the supplied voltage is under 12 V.

When you use one of the following functions, the video light cannot work.

- Tape Photo recording
- Cut recording

When the LIGHT switch is set to AUTO

Turning on/off the video light is synchronized with the recording start/stop operation. The screen may momentarily glow in high-intensity according to recording conditions. To prevent this phenomenon from occurring, shoot in one of the following ways:

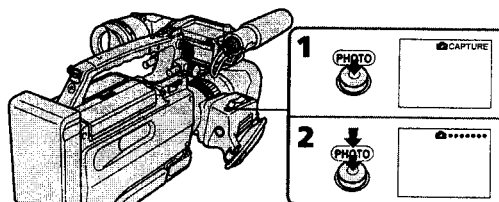
- Shoots in manual adjustment mode to fix the setting.
- Turns on the video light and shoots with the LIGHT switch on the camcorder set to MAN.

Recording a still image on a tape – Tape Photo recording

You can record still images on tapes with all the pixels in the progressive mode. See page 64 for details. This mode is useful when you print images using a video printer (not supplied).

Besides the operation described here, your camcorder can record still images on a "Memory Stick" (p. 134).

- (1) In standby mode, keep pressing PHOTO lightly until a picture freezes. The CAPTURE indicator appears. Recording does not start yet. To change the image, release PHOTO, select an image again, and then press and hold PHOTO lightly.
- (2) Press PHOTO deeper.
 - The still image on the LCD screen or in the viewfinder is recorded for about seven seconds. The sound during those seven seconds is also recorded.
 - The still image is displayed on the LCD screen or in the viewfinder until recording is completed.



The number of still images recordable on a cassette

	DVCAM format	DV format
DV cassette (60 minutes)	—	About 510
DV cassette (270 minutes)	—	About 2300
DVCAM cassette (40 minutes)	About 340	—
DVCAM cassette (184 minutes)	About 1570	—

Notes

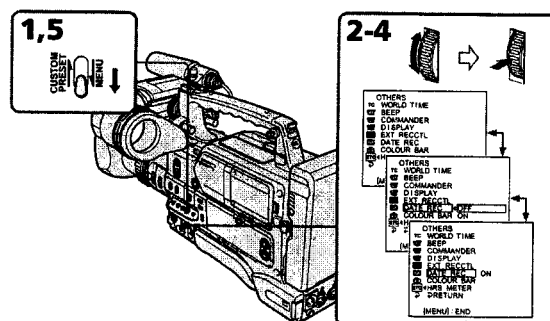
- During tape photo recording, you cannot change the mode or setting.
- The PHOTO button does not work:
 - While the fader function is set or in use.
 - While the digital effect function is set or in use.
- Do not shake the camcorder during tape photo recording, the recorded image may be blurred.

Superimposing the date and time on a picture

You can superimpose the date/time indication directly on the picture, besides the date/time display as data code.

- (1) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu in standby mode.
- (2) Turn the SEL/PUSH EXEC dial to select , then press the dial.
- (3) Turn the SEL/PUSH EXEC dial to select DATE REC, then press the dial.
- (4) Turn the SEL/PUSH EXEC dial to select ON, then press the dial.
- (5) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to erase the menu display.

The date/time indicator displayed on the LCD screen or in the viewfinder



To cancel superimposing the date/time indication

Select OFF in step 4, then press the SEL/PUSH EXEC dial.

Note

Note
You cannot erase the recorded date/time data on the picture. Before using this function, make sure that you set the date and time correctly.

Recording a still image on a tape – Tape Photo recording

To do tape photo recording using the Remote Commander

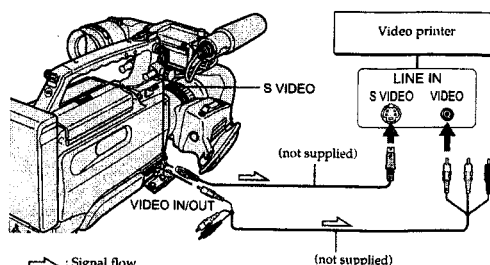
Press **PHOTO** on the Remote Commander. Your camcorder immediately records an image on the LCD screen or in the viewfinder.

When you do tape photo recording during normal CAMERA recording

You cannot check an image on the LCD screen or in the viewfinder by pressing PHOTO lightly. Press PHOTO deeper. The still image is then recorded for about seven seconds and your camcorder returns to standby mode.

Printing the still image

You can print a still image by using a video printer (not supplied). Connect with the video printer using the A/V connecting cable. Connect the yellow plugs of the cable to the video input of the video printer and the VIDEO IN/OUT jack on your camcorder. Refer to the operating instructions of the video printer as well.



If the video printer is equipped with an S video input

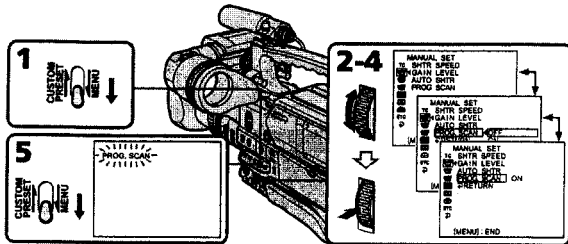
Use an S video connecting cable (not supplied). Connect it to the S VIDEO jack on your camcorder and the S video input of the video printer.

Shooting with all the pixels – PROG. SCAN

When you handle the digital images on your PC, set PROG. SCAN to ON before shooting. You can record the images on a tape with higher resolution. Since the image taken in progressive mode would be stabilized even in pause mode, it is especially useful when you analyze high-speed actions such as sports scenes.



- (1) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu in standby mode.
- (2) Turn the SEL/PUSH EXEC dial to select , then press the dial.
- (3) Turn the SEL/PUSH EXEC dial to select PROG. SCAN, then press the dial.
- (4) Turn the SEL/PUSH EXEC dial to select ON, then press the dial.
- (5) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to erase the menu display. The PROG. SCAN indicator lights up.



To return to normal mode

Select OFF in step 4, then press the SEL/PUSH EXEC dial.

Note on the progressive mode

A normal TV broadcast divides the screen into two finer fields and displays them in turns every 1/50 of a second. Thus, the actual image displayed in an instant covers only half of the apparent image area. Displaying the whole image simultaneously on a full screen is called displaying with all the pixels. In this mode, the resolution of the still picture is clearer than in the normal mode. This camcorder takes in an image every 2/25 of a second, which may cause the image of a moving object to go out of focus. This camcorder is originally programmed to record in the normal TV format.

When shooting under fluorescent light

When shooting in progressive mode under fluorescent light or light bulbs, a rare phenomenon may happen in which the screen lights up brightly (Flicker phenomenon). This is not a malfunction. If you want to stop this phenomenon, set PROG. SCAN to OFF in the menu settings.

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Shooting with all the pixels – PROG. SCAN

On digital zooming

You cannot use digital zooming in this mode.

When the auto logo insert function is activated

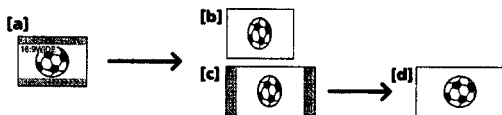
You cannot use the progressive mode. Refer to the extra operating instructions, "Auto Logo Insert for Copyright Protection."

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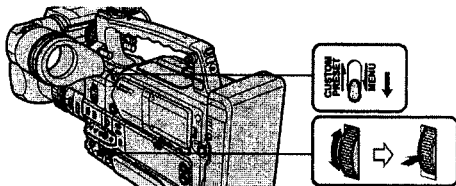
65

Using the wide mode

You can record a 16:9 wide picture to watch on a 16:9 wide-screen monitor (16:9WIDE). Black bands appear on the LCD screen or in the viewfinder during recording in 16:9WIDE mode [a]. The picture during playback on a normal monitor [b] or on a wide-screen monitor [c] is compressed in the widthwise direction. If you set the screen mode of the wide-screen monitor to the full mode, you can watch pictures of normal images [d].



In standby mode, set 16:9WIDE to ON in in the menu settings (p. 120).



To cancel the wide mode

Set 16:9WIDE to OFF in the menu settings (p. 120).

In wide mode, you cannot select the following modes:

- Old movie
- Progressive mode

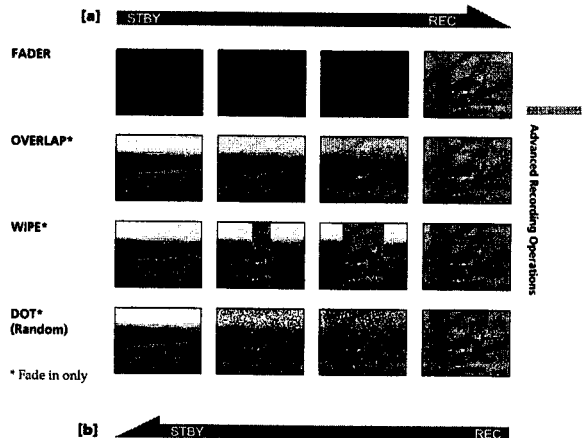
During recording

You cannot operate the wide mode function. When you cancel the wide mode, set your camcorder to the standby mode and then set 16:9WIDE to OFF in the menu settings.

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Using the fader function

You can fade the picture in or out to give your recording a professional appearance.



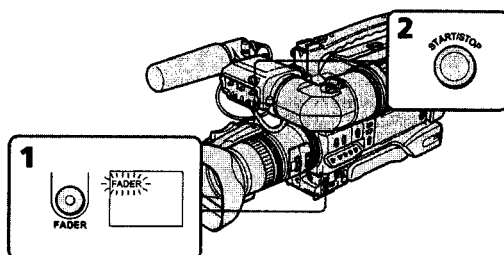
MONOTONE

When fading in, the picture gradually changes from black-and-white to colour. When fading out the picture gradually changes from colour to black-and-white.

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Using the fader function

- (1) When fading in [a]
In standby mode, press FADER until the desired fader indicator flashes.
When fading out [b]
In recording mode, press FADER until the desired fader indicator flashes.
The indicator changes as follows:
FADER → MONOTONE → OVERLAP → WIPE → DOT → no indicator
The last selected fader mode is indicated first.
- (2) Press START/STOP. After the fade in/out is carried out, your camcorder automatically returns to the normal mode.



To cancel the fader function
Press FADER until the indicator disappears.

Note
You cannot use the following functions while using the fader function, and vice versa:
- Digital effect
- Tape Photo recording
- Interval recording
- Cut recording

When the OVERLAP, WIPE, or DOT indicator appears
Your camcorder automatically stores the image recorded on a tape. As the image is being stored, the fader indicator flashes fast, and the playback picture appears.

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Using special effects – Digital effect

You can add special effects to recorded pictures using the various digital functions. The sound is recorded normally.

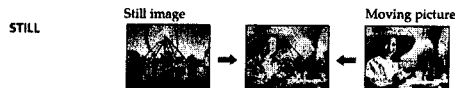
STILL
You can record a still image so that it is superimposed on a moving picture.

FLASH (FLASH MOTION)
You can record still images successively at constant intervals.

LUMI. (LUMINANCEKEY)
You can swap a brighter area in a still image with a moving picture.

TRAIL
You can record the picture so that an incidental image like a trail is left.

OLD MOVIE
You can add an old movie type atmosphere to pictures. The black bands appear on the upper and lower of the screen to change the virtual screen size to the cinemascop size, and the picture effect is set to SEPIA.



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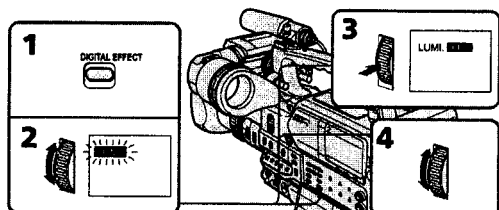
Using special effects – Digital effect

- (1) In standby or recording mode, press DIGITAL EFFECT. The digital effect indicator appears.
- (2) Turn the SEL/PUSH EXEC dial to select the desired digital effect mode.
The digital effect indicator changes as follows:
STILL ↔ FLASH ↔ LUMI. ↔ TRAIL ↔ OLD MOVIE
- (3) Press the SEL/PUSH EXEC dial. The indicator lights up and the bar appears.
In STILL and LUMI. modes, the still image is stored in memory.
- (4) Turn the SEL/PUSH EXEC dial to adjust the effect.

Items to be adjusted

STILL	The rate of the still image you want to superimpose on the moving picture
FLASH	The interval of flash motion
LUMI.	The colour scheme of the area in the still image which is to be swapped with a moving picture
TRAIL	The time until the incidental image vanishes
OLD MOVIE	No adjustment necessary

The longer the bar on the screen, the stronger the digital effect. The bar appears in the following modes: STILL, FLASH, LUMI. and TRAIL.



To cancel the digital effect
Press DIGITAL EFFECT. The digital effect indicator disappears.

Notes
• The following functions do not work in digital effect mode:
- Fader
- Tape Photo recording
- Shutter speed (1/25 or smaller) adjustment
• The following functions do not work in old movie mode:
- Wide mode
- Spot light mode

When you manually adjust the shutter speed
OLD MOVIE will be automatically cancelled.

When you turn the power off
Digital effect will be automatically cancelled.

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Superimposing a still image in a "Memory Stick" on a moving picture – MEMORY MIX

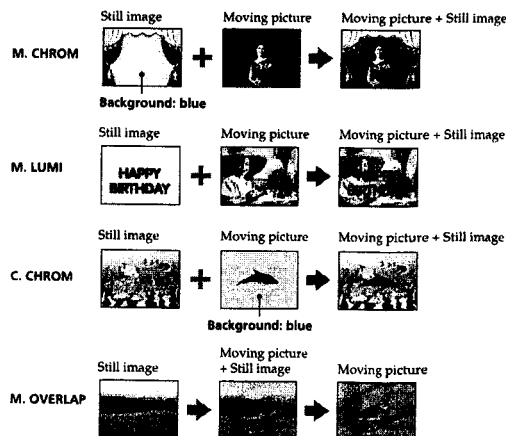
You can superimpose a still image you have recorded on a "Memory Stick" on the top of the moving picture you are recording.

M. CHROM (Memory chromakey)
You can swap a blue area of a still image such as an illustration or a frame with a moving picture.

M. LUMI (Memory luminancekey)
You can swap a brighter area of a still image such as a handwritten illustration or title with a moving picture. Record a title on a "Memory Stick" before a trip or event for convenience.

C. CHROM (Camera chromakey)
You can superimpose a moving picture on a still image that used as background. Shoot the subject against a blue background. The blue area of the moving picture will be swapped with a still image.

M. OVERLAP (Memory overlap)
You can make a moving picture fade in on top of a still image.



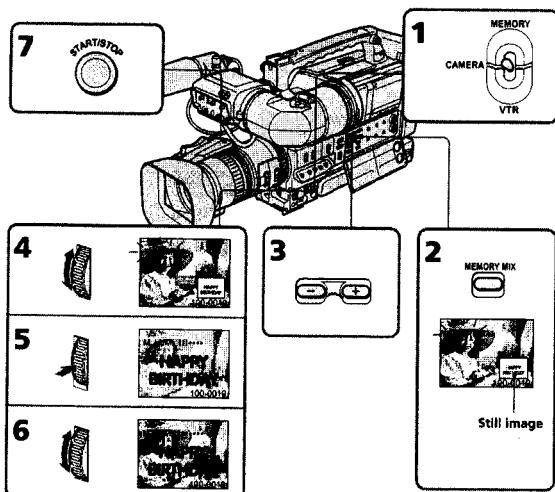
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Superimposing a still image in a "Memory Stick" on a moving picture - MEMORY MIX

Before operation

Insert a recorded "Memory Stick" and a tape to be recorded into your camcorder.

- (1) Set the MEMORY/CAMERA/VTR selector to CAMERA.
- (2) Press MEMORY MIX in standby mode.
The last recorded or last composed image appears on the lower part of the screen as a thumbnail image.
- (3) Press MEMORY+/- or +/- on the Remote Commander to select the still image you want to superimpose.
To see the previous image, press MEMORY- or - on the Remote Commander.
To see the next image, press MEMORY+ or + on the Remote Commander.
- (4) Turn the SEL/PUSH EXEC dial to select the desired mode.
The mode changes as follows:
M. CHROM ↔ M. LUMI ↔ C. CHROM ↔ M. OVERLAP
- (5) Press the SEL/PUSH EXEC dial.
The still image is superimposed on the moving picture, and your camcorder is in standby mode.
- (6) Turn the SEL/PUSH EXEC dial to adjust the effect.
- (7) Press START/STOP to start recording.



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Superimposing a still image in a "Memory Stick" on a moving picture - MEMORY MIX

Items to be adjusted

M. CHROM	The colour (blue) scheme of the area in the still picture which is to be swapped with a moving picture
M. LUMI	The colour (bright) scheme of the area in the still picture which is to be swapped with a moving picture
C. CHROM	The colour (blue) scheme of the area in the moving picture which is to be swapped with a still picture
M. OVERLAP	No adjustment necessary

As the bar is shorter, the effect is enhanced.

To change the still image to be superimposed

Do either of the following:

- Press MEMORY+/- before step 7.
- Press the SEL/PUSH EXEC dial after step 6, and repeat the procedure from step 3 (except M. OVERLAP).

To change the mode setting

Press SEL/PUSH EXEC dial after step 6, and repeat the procedure from step 4 (except M. OVERLAP).

To cancel MEMORY MIX

Press MEMORY MIX again.

During recording

You cannot change the mode setting.

The "Memory Stick" supplied with your camcorder has 20 images stored

- For M. CHROM: 18 images (such as a frame) 100-0001 to 100-0018
- For C. CHROM: two images (such as background) 100-0019 to 100-0020

Sample images

Sample images stored in the "Memory Stick" supplied with your camcorder are protected (p. 149).

If a still image to be superimposed has lots of white areas
The thumbnail image may not be displayed clearly.

Image data modified with personal computers or shot with other equipment
You may not be able to play them back with your camcorder.

When the auto logo insert function is activated

You cannot use memory mix function. Refer to the extra operating instructions, "Auto Logo Insert for Copyright Protection."

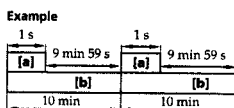
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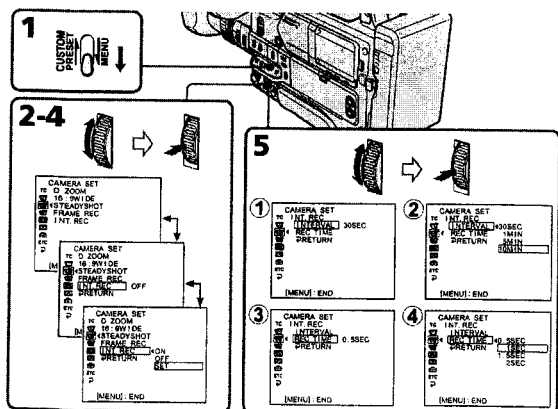
Interval recording

You can make a time-lapse recording by setting the camcorder to automatically record and standby sequentially. You can achieve an excellent recording for flowering, emergence, etc., with this function.

- [a] Recording time
[b] Waiting time

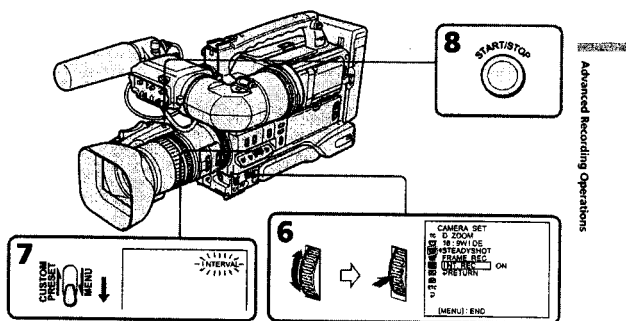


- (1) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu in standby mode.
- (2) Turn the SEL/PUSH EXEC dial to select INT. REC, then press the dial.
- (3) Turn the SEL/PUSH EXEC dial to select INT. REC, then press the dial.
- (4) Turn the SEL/PUSH EXEC dial to select SET, then press the dial.
- (5) Set INTERVAL and REC TIME.
 - ① Turn the SEL/PUSH EXEC dial to select INTERVAL, then press the dial.
 - ② Turn the SEL/PUSH EXEC dial to select the desired interval time, then press the dial.
The time: 30SEC ↔ 1MIN ↔ 5MIN ↔ 10MIN.
 - ③ Turn the SEL/PUSH EXEC dial to select REC TIME, then press the dial.
 - ④ Turn the SEL/PUSH EXEC dial to select the desired recording time, then press the dial.
The time: 0.5SEC ↔ 1SEC ↔ 1.5SEC ↔ 2SEC.
 - ⑤ Turn the SEL/PUSH EXEC dial to select RETURN, then press the dial.



Interval recording

- (6) Turn the SEL/PUSH EXEC dial to select ON, then press the dial.
- (7) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to erase the menu display. The interval recording indicator flashes.
- (8) Press START/STOP to start interval recording. The interval recording indicator lights up.



To cancel the interval recording

- Set INT. REC to OFF in the menu settings.
- Set the MEMORY/CAMERA/VTR selector to VTR or MEMORY.

To stop the interval recording momentarily and perform normal recording

Press START/STOP. You can perform normal recording only once. To cancel the normal recording, press START/STOP again.

On recording time

There may be a discrepancy in recording time of up to +/- 6 frames from the selected time.

If you set FRAME REC to ON in standby mode
The interval recording will be cancelled.

Even if you press INDEX MARK during interval recording
You cannot mark an index.

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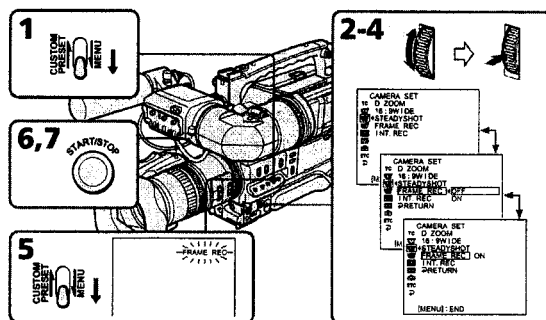
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Frame by frame recording – Cut recording

You can make a recording with a stop-motion animated effect using cut recording. To create this effect, alternately move the subject a little and make a cut recording. We recommend that you use a tripod, and operate the camcorder using the Remote Commander after step 6.

- (1) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu in standby mode.
- (2) Turn the SEL/PUSH EXEC dial to select **FRAME REC**, then press the dial.
- (3) Turn the SEL/PUSH EXEC dial to select **FRAME REC**, then press the dial.
- (4) Turn the SEL/PUSH EXEC dial to select **ON**, then press the dial.
- (5) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to erase the menu display.
The **FRAME REC** indicator lights up.
- (6) Press **START/STOP** to start cut recording. The camcorder makes a recording for about six frames, and returns to recording standby.
- (7) Move the subject, and repeat step 6.



To cancel the cut recording

- Set **FRAME REC** to OFF in the menu settings.
- Set the **MEMORY/CAMERA/VTR** selector to **VTR** or **MEMORY**.

Notes on cut recording

- The last recorded cut is longer than other cuts.
- The proper remaining tape time is not indicated if you use this function continuously.
- You cannot mark an index during cut recording.

If you set **INT. REC** to **ON** in standby mode
The cut recording will be cancelled.

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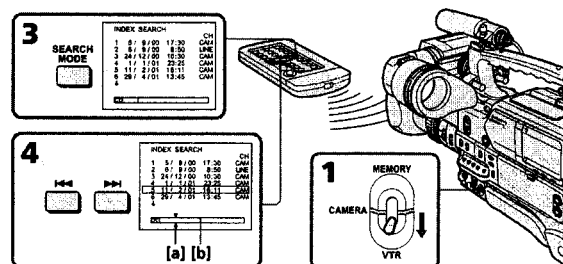
Searching for a recording by index – Index search

You can automatically search for the point where an index is marked and start playback from that point (**index search**). Use a tape with cassette memory for convenience. Use the Remote Commander for this operation.
Use this function to check where indexes are marked or to edit the tape at each sequence where the index is marked.

Searching for the index point using cassette memory

You can use this function only when playing back a tape with cassette memory (p. 158).

- (1) Set the **MEMORY/CAMERA/VTR** selector to **VTR**.
- (2) Set **CM SEARCH** in **ON** in the menu settings (p. 120). The default setting is **ON**.
- (3) Press **SEARCH MODE** on the Remote Commander repeatedly, until the index search indicator appears.
The indicator changes as follows:
INDEX SEARCH → **TITLE SEARCH** → **DATE SEARCH** → **PHOTO SEARCH** → **PHOTO SCAN** → no indicator
- (4) Press **◀** or **▶** on the Remote Commander to select the index point for playback.
Your camcorder automatically starts playing back at the selected index point.



- [a] Actual point you are trying to search for
[b] Present point on the tape

To stop searching

Press **■**.

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Searching for a recording by index – Index search

If a tape has a blank portion between recorded portions
The index search function may not work correctly.

If you mark an index onto an external input signal
“LINE” appears in the CH column.

The index of the recording start point when recorded from external audio equipment

The index mark is not recorded in cassette memory when recorded from external audio equipment. If you want to search for the index point, set **CM SEARCH** to OFF in the menu settings and search for the index point without cassette memory.

Searching for the index point without using cassette memory

- (1) Set the **MEMORY/CAMERA/VTR** selector to **VTR**.
- (2) Set **CM SEARCH** in **OFF** in the menu settings (p. 120). If using a tape without cassette memory, skip this step.
- (3) Press **SEARCH MODE** on the Remote Commander repeatedly, until the index search indicator appears.
The indicator changes as follows:
INDEX SEARCH → **DATE SEARCH** → **PHOTO SEARCH** → **PHOTO SCAN** → no indicator
- (4) Press **◀** on the Remote Commander to search for the previous index point or press **▶** on the Remote Commander to search for the next index point.
Your camcorder automatically starts playback at the selected index point. Each time you press **◀** or **▶**, your camcorder searches for the previous or next index point.

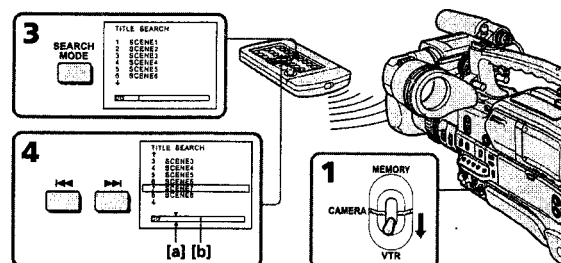
To stop searching

Press **■**.

Searching the boundaries of recorded tape by title – Title search

If you use a tape with cassette memory, you can search for the boundaries of recorded tape by title (**title search**) (p. 158). Use the Remote Commander for this operation.

- (1) Set the **MEMORY/CAMERA/VTR** selector to **VTR**.
- (2) Set **CM SEARCH** in **ON** in the menu settings (p. 120). The default setting is **ON**.
- (3) Press **SEARCH MODE** on the Remote Commander repeatedly, until the title search indicator appears.
The indicator changes as follows:
INDEX SEARCH → **TITLE SEARCH** → **DATE SEARCH** → **PHOTO SEARCH** → **PHOTO SCAN** → no indicator
- (4) Press **◀** or **▶** on the Remote Commander to select the title for playback.
Your camcorder automatically starts playback of the scene having the title that you selected.



- [a] Actual point you are trying to search for
[b] Present point on the tape

To stop searching

Press **■**.

If you use a tape without cassette memory
You cannot superimpose or search for a title.

If a tape has a blank portion between recorded portions
The title search function may not work correctly.

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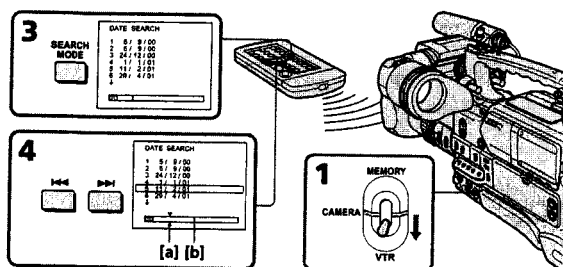
Searching a recording by date - Date search

You can automatically search for the point where the recording date changes and start playback from that point (**Date search**). Use a tape with cassette memory for convenience. Use the Remote Commander for this operation.
Use this function to check where recording dates change or to edit the tape at each recording date.

Searching for the date using cassette memory

You can use this function only when playing back a tape with cassette memory (p. 158).

- (1) Set the MEMORY/CAMERA/VTR selector to VTR.
- (2) Set CM SEARCH in  to ON in the menu settings (p. 120). The default setting is ON.
- (3) Press SEARCH MODE on the Remote Commander repeatedly, until the date search indicator appears.
The indicator changes as follows:
INDEX SEARCH → TITLE SEARCH → DATE SEARCH → PHOTO SEARCH → PHOTO SCAN → no indicator
- (4) Press  or  on the Remote Commander to select the date for playback.
Your camcorder automatically starts playback at the beginning of the selected date.



[a] Actual point you are trying to search for
[b] Present point on the tape

To stop searching
Press .

Searching a recording by date - Date search

If a tape has a blank portion between recorded portions
The date search function may not work correctly.

Searching for the date without using cassette memory

- (1) Set the MEMORY/CAMERA/VTR selector to VTR.
- (2) Set CM SEARCH in  to OFF in the menu settings (p. 120). If using a tape without cassette memory, skip this step.
- (3) Press SEARCH MODE on the Remote Commander repeatedly, until the date search indicator appears.
The indicator changes as follows:
INDEX SEARCH → DATE SEARCH → PHOTO SEARCH → PHOTO SCAN → no indicator
- (4) Press  on the Remote Commander to search for the previous date or press  on the Remote Commander to search for the next date. Your camcorder automatically starts playback at the point where the date changes. Each time you press  or , your camcorder searches for the previous or next date.

To stop searching
Press .

Note
If one day's recording is less than two minutes, your camcorder may not accurately find the point where the recording date changes.

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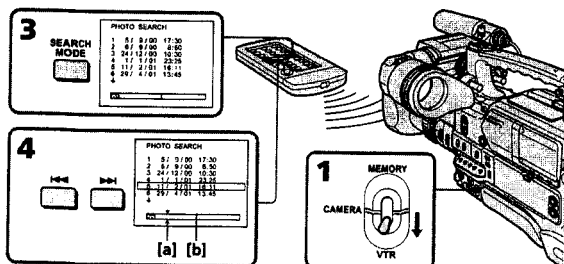
Searching for a photo - Photo search/ Photo scan

You can search for a still picture you have recorded on a tape (**photo search**). You can also search for still pictures one after another and display each picture for five seconds automatically regardless of cassette memory (**photo scan**). Use the Remote Commander for these operations.
Use this function to check or edit still pictures.

Searching for a photo using cassette memory

You can use this function only when playing back a tape with cassette memory (p. 158).

- (1) Set the MEMORY/CAMERA/VTR selector to VTR.
- (2) Set CM SEARCH in  to ON in the menu settings (p. 120). Default setting is ON.
- (3) Press SEARCH MODE on the Remote Commander repeatedly, until the photo search indicator appears.
The indicator changes as follows:
INDEX SEARCH → TITLE SEARCH → DATE SEARCH → PHOTO SEARCH → PHOTO SCAN → no indicator
- (4) Press  or  on the Remote Commander to select the date for playback.
Your camcorder automatically starts playback of the photo having the date that you selected.



[a] Actual point you are trying to search for
[b] Present point on the tape

To stop searching
Press .

If a tape has a blank portion between recorded portions
The photo search function may not work correctly.

Searching for a photo - Photo search/Photo scan

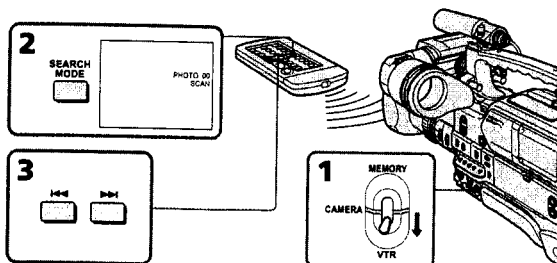
Searching for a photo without using cassette memory

- (1) Set the MEMORY/CAMERA/VTR selector to VTR.
- (2) Set CM SEARCH in  to OFF in the menu settings (p. 120).
- (3) Press SEARCH MODE on the Remote Commander repeatedly, until the photo search indicator appears.
The indicator changes as follows:
INDEX SEARCH → DATE SEARCH → PHOTO SEARCH → PHOTO SCAN → no indicator
- (4) Press  or  on the Remote Commander to select a photo for playback.
Each time you press  or , your camcorder searches for the previous or next photo.
Your camcorder automatically starts playback of the photo.

To stop searching
Press .

Scanning photo

- (1) Set the MEMORY/CAMERA/VTR selector to VTR.
- (2) Press SEARCH MODE on the Remote Commander repeatedly, until the photo scan indicator appears.
The indicator changes as follows:
INDEX SEARCH → TITLE SEARCH → DATE SEARCH → PHOTO SEARCH → PHOTO SCAN → no indicator
- (3) Press  or  on the Remote Commander.
Each photo is played back for about five seconds automatically.



To stop scanning
Press .

Advanced Playback Operations

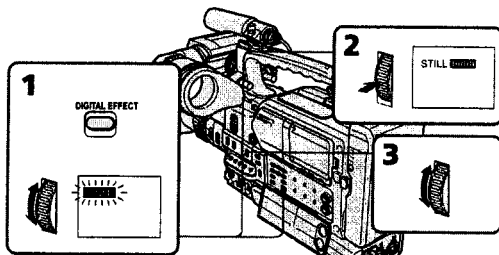
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Playing back a tape with digital effects

During playback, you can process a scene using the digital effect functions: STILL, FLASH, LUMI, and TRAIL.

- (1) In playback or playback pause mode, press DIGITAL EFFECT and turn the SEL/PUSH EXEC dial until the desired digital effect indicator (STILL, FLASH, LUMI, or TRAIL) flashes.
- (2) Press the SEL/PUSH EXEC dial.
The digital effect indicator lights up and the bars appear. In STILL or LUMI mode, the picture is captured and is stored in memory as a still picture at the time you press the SEL/PUSH EXEC dial.
- (3) Turn the SEL/PUSH EXEC dial to adjust the effect.
For details of each digital effect function, see page 69.



To cancel the digital effect function

Press DIGITAL EFFECT so that the indicator disappears.

Notes

- You cannot process a picture using the digital effect function that is input from other equipment.
- To record pictures that you have processed using the digital effect function, record the pictures on the VCR, using your camcorder as a player.

Pictures processed by the digital effect function

Pictures processed by the digital effect function are not output through the i DV IN/OUT connector.

When you set the POWER switch to OFF or stop playing back
The digital effect function will be automatically cancelled.

— Editing —

Dubbing a tape

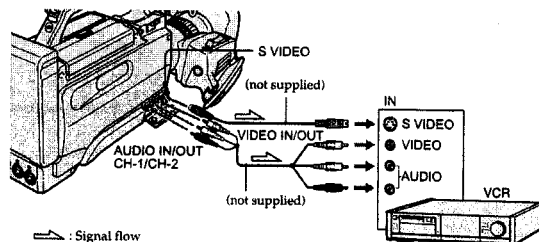
Using the A/V connecting cable

Connect your camcorder to the VCR using the A/V connecting cable. Recording quality by analog input, however, is not satisfying for professional use.

Before a dubbing

Set DISPLAY to LCD in the menu settings. (Default setting is LCD.)

- (1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert the recorded tape into your camcorder.
- (2) Set the input selector on the VCR to LINE. For details, refer to the operating instructions of the VCR.
- (3) Set the MEMORY/CAMERA/VTR selector to VTR.
- (4) Play back the recorded tape on your camcorder.
- (5) Start recording on the VCR. For details, refer to the operating instructions of the VCR.



After you finish dubbing the tape

Press ■ on both your camcorder and the VCR.

Be sure to clear the indicators from the screen

If they are displayed, press the following buttons so as not to record the indicators on the dubbed tape:

- The DATA CODE button
- The SEARCH MODE button on the Remote Commander

You can edit on VCRs that support the following systems

8 mm, Hi8, Hi8i, Digital8, Hi8S, VHS, Hi8S S-VHS, Hi8S S-VHS, Hi8S S-VHSC, Betamax, ED Betamax, DVCAM, mini DV or DV

If your VCR is a monaural type

Connect with a VCR using the audio cable (monaural ↔ stereo) (not supplied).

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Dubbing a tape

Connect using an S video cable (not supplied) to obtain high-quality pictures

With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable.

Connect an S video cable (not supplied) to the S video jacks of both your camcorder and the VCR.

This connection produces higher quality DVCAM/DV format pictures.

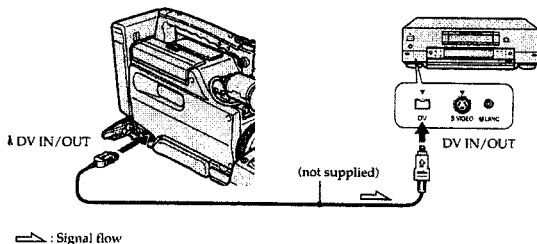
Note

You can edit precisely by connecting a LANC cable (not supplied) to this camcorder and other video equipment having a fine synchro-editing function, using this camcorder as a player.

Using a DV connecting cable (i.LINK cable)

Simply connect the DV connecting cable (i.LINK cable) (not supplied) to i DV IN/OUT and to DV IN/OUT of the DVCAM/DV products. With a digital-to-digital connection, video and audio signals are transmitted in digital form for high-quality editing. You cannot dub the titles, display indicators or the contents of cassette memory.

- (1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert the recorded tape into your camcorder.
- (2) Set the input selector on the VCR to the DV input position if the VCR is equipped with an input selector. For details, refer to the operating instructions of the VCR.
- (3) Set the MEMORY/CAMERA/VTR selector to VTR.
- (4) Play back the recorded tape on your camcorder.
- (5) Start recording on the VCR.



When you have finished dubbing a tape

Press ■ on both your camcorder and the VCR.

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Dubbing a tape

You can connect only one VCR using the DV connecting cable (i.LINK cable)

Pictures processed by the digital effect function

Pictures processed by the digital effect function are not output through the i DV IN/OUT connector.

If you record a playback pause picture with the i DV IN/OUT connector

The recorded picture becomes rough. And when you play back the picture using other video equipment, the picture may jitter.

When dubbing tapes using the DSR-70P

A continuous recorded section of approximately five seconds is required before the recording start point. It is recommended to record colour bars or a similar signal beforehand at the start point of the source tape to be dubbed on the camcorder.

Editing

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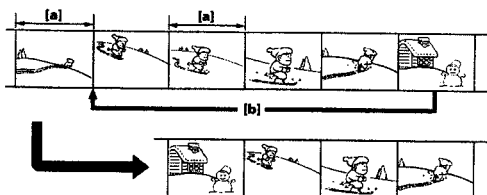
Editing

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Dubbing only desired scenes – Digital program editing

You can duplicate selected scenes (programs) for editing onto a tape without operating the VCR. Scenes can be selected by frame.

To use this function, a DV connecting cable (i.LINK cable) (not supplied) will be required.



[a] Undesired frame
[b] Moves the scene

To do the digital program editing

Make sure that the external VCR to be connected is equipped with the DV IN connector. This camcorder is used as player.

Before operating the digital program editing

Preparation 1 Connecting the VCR. (below)

Preparation 2 Adjusting the synchronization of the VCR. (p. 89).

When you dub using the same VCR again, you can skip Preparation 2.

Using the digital program editing function

Operation 1 Making programs. (p. 91)

Operation 2 Performing a digital program editing (Dubbing a tape). (p. 93)

Notes

- You cannot dub the titles, display indicators, or the contents of cassette memory.
- If you start recording from the very beginning of the tape, the first few seconds of the tape may not record properly. Be sure to allow about 10 seconds' lead before starting the recording.

Preparation 1: Connecting the VCR

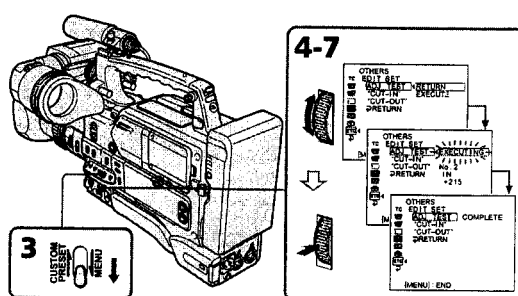
Connect your camcorder and the VCR as shown on page 86.

Dubbing only desired scenes – Digital program editing

Preparation 2: Adjusting the synchronization of the VCR

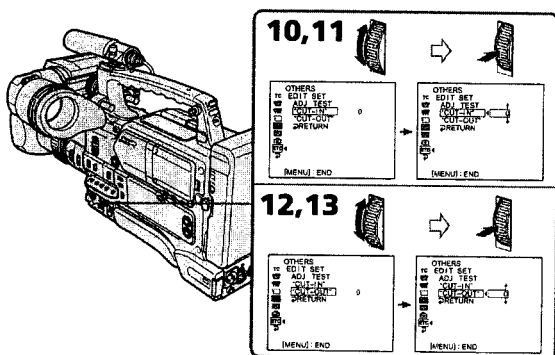
You can adjust the synchronization of your camcorder and the VCR. Remove the cassette from the camcorder beforehand. We recommend that you prepare a pen and paper for notes.

- Insert a recordable tape into the VCR.
- Set the MEMORY/CAMERA/VTR selector to VTR.
- Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu.
- Turn the SEL/PUSH EXEC dial to select then press the dial.
- Turn the SEL/PUSH EXEC dial to select EDIT SET, then press the dial.
- Turn the SEL/PUSH EXEC dial to select ADJ TEST, then press the dial.
- Turn the SEL/PUSH EXEC dial to select EXECUTE, then press the dial. CUT-IN and CUT-OUT are recorded on an image for five times each to calculate the numerical values for adjusting the synchronization. The EXECUTING indicator flashes on the LCD screen or in the viewfinder. When finished, the indicator changes to COMPLETE.
- Rewind the tape in the VCR, then start slow playback. Take a note of the opening numerical value of each CUT-IN and the closing numerical value of each CUT-OUT.
- Calculate the average of all the opening numerical values of each CUT-IN, and the average of all the closing numerical values of each CUT-OUT.



Dubbing only desired scenes – Digital program editing

- Turn the SEL/PUSH EXEC dial to select "CUT-IN," then press the dial.
- Turn the SEL/PUSH EXEC dial to select the average numerical value of CUT-IN, then press the dial. The calculated start position for recording is set.
- Turn the SEL/PUSH EXEC dial to select "CUT-OUT," then press the dial.
- Turn the SEL/PUSH EXEC dial to select the average numerical value of CUT-OUT, then press the dial. The calculated stop position for recording is set.
- Turn the SEL/PUSH EXEC dial to select , then press the dial.



Errors in editing

If you connect your camcorder to Sony equipment with the DV jack, the range of errors is within ± 5 frames.

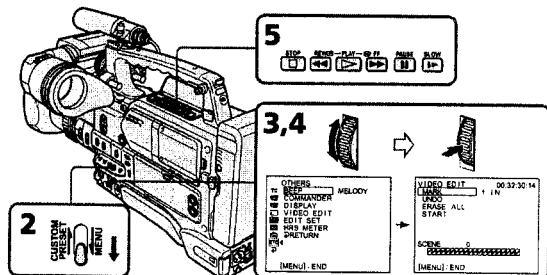
The range may become wider in the following conditions:

- The interval between CUT-IN and CUT-OUT is less than five seconds (p. 92).
- CUT-IN or CUT-OUT is set at the beginning of the tape.

Dubbing only desired scenes – Digital program editing

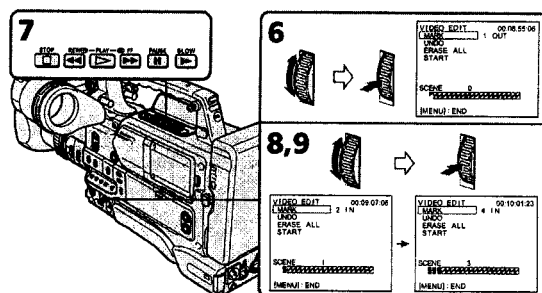
Operation 1: Making Programs

- Insert the tape for playback into your camcorder, and insert a tape for recording into the VCR.
- Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu.
- Turn the SEL/PUSH EXEC dial to select then press the dial.
- Turn the SEL/PUSH EXEC dial to select VIDEO EDIT, then press the dial.
- Search for the beginning of the first scene you want to insert using the video control buttons, then pause playback (p. 33).



Dubbing only desired scenes – Digital program editing

- (6) Press the SEL/PUSH EXEC dial, or MARK on the Remote Commander.
The CUT-IN point of the first program is set, and the top part of the program mark changes to light blue.
- (7) Search for the end of the first scene you want to insert using the video control buttons, then pause playback (p. 33).
- (8) Press the SEL/PUSH EXEC dial, or MARK on the Remote Commander.
The CUT-OUT point of the first program is set, then the bottom part of the program mark changes to light blue.
- (9) Repeat steps 5 to 8, then set PROGRAM.
When the program is set, the program mark changes to light blue.
You can set a maximum of 20 programs.



On a blank portion of the tape

You cannot set CUT-IN or CUT-OUT on a blank portion of the tape.

Erasing the last program

To change the end of the last program, delete the CUT-OUT mark.
To erase the whole program, delete both the CUT-IN and CUT-OUT marks.

- (1) Turn the SEL/PUSH EXEC dial to select UNDO, then press the dial.
- (2) Turn the SEL/PUSH EXEC dial to select EXECUTE, then press the dial.
The last set program mark flashes, then the setting is cancelled.

To cancel erasing

Select RETURN in step 2, then press the SEL/PUSH EXEC dial.

Dubbing only desired scenes – Digital program editing

Erasing all programs

- (1) Select VIDEO EDIT in the menu settings. Turn the SEL/PUSH EXEC dial to select ERASE ALL, then press the dial.
- (2) Turn the SEL/PUSH EXEC dial to select EXECUTE, then press the dial.
All the program marks flash, then the settings are cancelled.

To cancel erasing all programs

Select RETURN in step 2, then press the SEL/PUSH EXEC dial.

To cancel a program you have set

Push the CUSTOM PRESET/MENU switch in the MENU direction and release it. The program is stored in memory until the tape is ejected.

Operation 2: Performing a digital program editing (Dubbing a tape)

- (1) Select VIDEO EDIT in the menu settings. Turn the SEL/PUSH EXEC dial to select START, then press the dial.
- (2) Turn the SEL/PUSH EXEC dial to select EXECUTE, then press the dial.
Search for the beginning of the first program, then start dubbing.
The EXECUTING indicator flashes.
The SEARCH indicator appears during search, and the EDIT indicator appears during editing on the LCD screen or in the viewfinder.
The PROGRAM indicator lights up after dubbing is complete.
When the dubbing ends, your camcorder and the VCR automatically stop.

To stop dubbing

Press ■ on this camcorder or on the Remote Commander.

To end the digital program editing function

Your camcorder stops when the dubbing is complete. Then the display returns to VIDEO EDIT in the menu settings.
Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to end the video program editing function.

You cannot record on the VCR when:

- The cassette is not inserted.
- The tape has run out.
- The write-protect tab is set to the protect position.

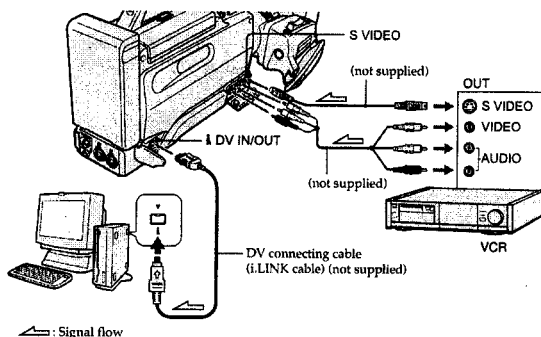
NOT READY appears on the LCD screen when:

- The program to operate the digital program editing has not been made.
- A DV connecting cable (i.LINK cable) is not connected.
- The power of the connected VCR is not turned on.

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Using with an analog video unit and a PC – Signal convert function

You can convert the analog input signal to the digital signal and output it from the i DV IN/OUT connector on this camcorder. You can capture images and sound from an analog video unit connecting a PC which has the i.LINK connector to your camcorder.



- (1) Set the MEMORY/CAMERA/VTR selector to VTR.
- (2) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu.
- (3) Turn the SEL/PUSH EXEC dial to select ■, then press the dial.
- (4) Turn the SEL/PUSH EXEC dial to select A/V → DV OUT, then press the dial.
- (5) Turn the SEL/PUSH EXEC dial to select ON, then press the dial.
- (6) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to erase the menu display.
- (7) Start playback on the analog video unit slightly ahead of the point from which you want to start capturing images.
- (8) Start capturing procedures on your PC. The operation procedures depend on your PC and the software which you use.
For details on how to capture images, refer to the instruction manual of your PC and your software.

After capturing images and sound

Stop capturing procedures on your PC, and stop the playback on the analog video unit.

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Using with an analog video unit and a PC – Signal convert function

Notes

- When you edit the captured image and sound from the analog video unit by a PC, you need to install an appropriate software which can exchange video signals between the camcorder and a PC.
- Depending on the condition of the analog video signals, the PC may not be able to output the images correctly when you convert analog video signals into digital video signals via your camcorder. Depending on the analog video unit, the image may contain noise or incorrect colours.
- The camcorder cannot output the digital signal when you input the analog signal that includes a copyright protection signal.

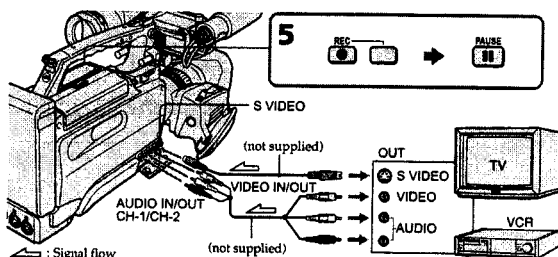
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Recording video or TV programs

Using the A/V connecting cable

You can record a tape from another VCR or a TV program from a TV that has video/audio outputs. Use your camcorder as a recorder.

- (1) Insert a blank tape (or a tape you want to record over) into your camcorder. If you want to record a tape from the VCR, insert a recorded tape into the VCR.
- (2) Set the MEMORY/CAMERA/VTR selector to VTR on your camcorder.
- (3) Set DISPLAY in to LCD in the menu settings (p. 120) or set the DISPLAY switch located on the front of the viewfinder to OFF.
- (4) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to erase the menu display.
- (5) Press and the button on its right simultaneously on your camcorder, then immediately press on your camcorder.
- (6) Press on the VCR to start playback if you record a tape from a VCR. Select a TV program if you record from a TV. The picture from a TV or VCR appears on the LCD screen or in the viewfinder.
- (7) Press on your camcorder at the scene from which you want to start recording.



When you have finished recording

Press on both your camcorder and the VCR.

Using the Remote Commander

In step 5, press and MARK simultaneously, then immediately press . And in step 7, press at the scene from which you want to start recording.

Recording video or TV programs

If your VCR is a monaural type

Connect with a VCR using the audio cable (monaural $\leftrightarrow$ stereo) (not supplied).

Connect using an S video cable (not supplied) to obtain high-quality pictures

With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable.

Connect an S video cable (not supplied) to the S video jacks of both your camcorder and the VCR.

This connection produces higher quality DVCAM/DV format pictures.

If you do various playbacks on the VCR during recording

The recorded picture may be blurred.

On the commander mode

Your camcorder works in the commander mode, VTR 2. Commander modes 1, 2 and 3 are used to distinguish your camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR in the commander mode VTR 2, we recommend changing the commander mode or covering the sensor of the VCR with black paper.

On index signal

The index is automatically marked on a tape when you start recording. If you mark the index using the INDEX MARK button during recording, "LINE" appears in the CH column on the INDEX SEARCH screen, and the index is recorded on cassette memory.

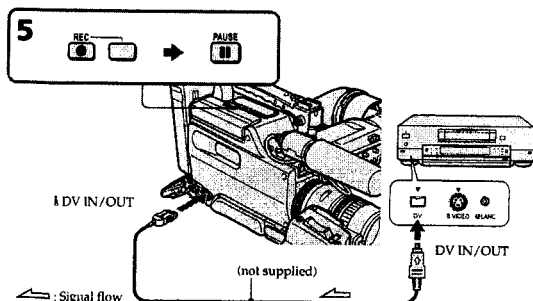
Editing

Recording video or TV programs

Using a DV connecting cable (i.LINK cable)

Simply connect the DV connecting cable (i.LINK cable) (not supplied) to and of the DVCAM/DV products. With a digital-to-digital connection, video and audio signals are transmitted in digital form for high-quality editing.

- (1) Insert a blank tape (or a tape you want to record over) into your camcorder, and insert the recorded tape into the VCR.
- (2) Set the MEMORY/CAMERA/VTR selector to VTR.
- (3) Set DISPLAY in to LCD in the menu settings (p. 120).
- (4) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to erase the menu display.
- (5) Press and the button on its right simultaneously on your camcorder, then immediately press on your camcorder.
- (6) Press on the VCR to start playback. The picture to be recorded appears on the LCD screen or in the viewfinder.
- (7) Press on your camcorder at the scene from which you want to start recording.



When you have finished recording

Press on both your camcorder and the VCR.

Using the Remote Commander

In step 5, press and MARK simultaneously, then immediately press . And in step 7, press at the scene from which you want to start recording.

Recording video or TV programs

You can connect only one VCR using the DV connecting cable (i.LINK cable)

When you dub a picture in digital form

The colour of the display may be uneven. However this does not affect the dubbed picture.

If you record a still picture in playback pause mode via the connector

The recorded picture becomes rough. And when you play back the picture using your camcorder, the picture may jitter.

Before recording

Set the DISPLAY indicator switch located on the front of the viewfinder to ON and make sure that the DV IN indicator appears on the LCD screen or in the viewfinder. The DV IN indicator may appear on both pieces of equipment.

On the commander mode

Your camcorder works in the commander mode, VTR 2. Commander modes 1, 2 and 3 are used to distinguish your camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR in the commander mode VTR 2, we recommend changing the commander mode or covering the sensor of the VCR with black paper.

Editing

Audio dubbing

You can record an audio sound to add to the original sound on a tape by connecting audio equipment or a microphone. If you connect audio equipment, you can add sound to your recorded tape by specifying the starting and ending points. The original sound will not be erased. You can also use the Remote Commander for this operation.

The relationship between audio input and channels on which a dubbed sound will be recorded

The relationship between audio input and channels on which a dubbed sound will be recorded is as follows:

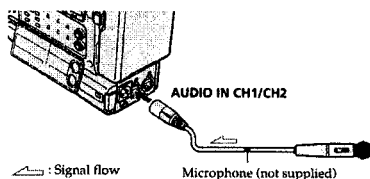
Audio input through	The position of the AUDIO INPUT switch (CH-1/CH-2)	Which audio input will be recorded on
		Channel 3 Channel 4
AUDIO IN/OUT CH-1/-CH-2		AUDIO IN/OUT CH-1 AUDIO IN/OUT CH-2
AUDIO IN/OUT CH-1		AUDIO IN/OUT CH-1 -
AUDIO IN/OUT CH-2		- AUDIO IN/OUT CH-2
AUDIO IN CH1/CH2	FRONT/FRONT	- -
	FRONT/REAR	- AUDIO IN CH2
	REAR/FRONT	AUDIO IN CH1 -
	REAR/REAR	AUDIO IN CH1 AUDIO IN CH2
AUDIO IN CH1	FRONT/FRONT	- -
	FRONT/REAR	- -
	REAR/FRONT	AUDIO IN CH1 -
	REAR/REAR	AUDIO IN CH1 -
AUDIO IN CH2	FRONT/FRONT	- -
	FRONT/REAR	- AUDIO IN CH2
	REAR/FRONT	- -
	REAR/REAR	- AUDIO IN CH2
MIC IN +48V	FRONT/FRONT	MIC IN +48V MIC IN +48V
	FRONT/REAR	MIC IN +48V -
	REAR/FRONT	- MIC IN +48V
	REAR/REAR	- -

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Audio dubbing

Dubbing with the AUDIO IN CH1/CH2 connectors

For details on setup of the AUDIO IN CH1/CH2 connectors, see "Using an external audio system or microphone" on page 58.

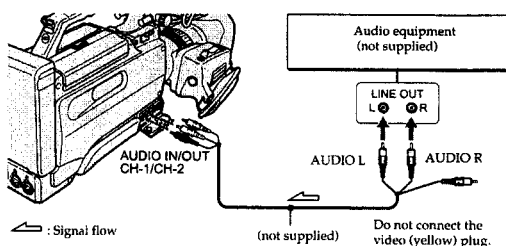


You can check the picture on a monitor by connecting the monitor to the VIDEO IN/OUT jack or VIDEO OUT connector. You can monitor the additional sound by the speaker or headphones.

Dubbing with the MIC IN +48V connector

Check that a 48-V microphone is connected to the MIC IN +48V connector.

Dubbing with the AUDIO IN/OUT CH-1/CH-2 jacks



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Audio dubbing

Notes

- New sound cannot be recorded on a tape already recorded in F548K mode (p. 125).
- You cannot dub any audio sound on a tape recorded in the DV format (SP mode), even if you recorded it in F548K (12-bit) mode.
- You cannot add audio with the L DV IN/OUT connector.

If you make all the connections

The audio input to be recorded will take precedence over others in the following order.

- AUDIO IN/OUT CH-1/CH-2 jacks
- AUDIO IN CH1/CH2 connectors, MIC IN +48V connector

If a DV connecting cable (i.LINK cable) (not supplied) is connected to your camcorder

You cannot add sound to a recorded tape.

If you set the REC/SAVE switch of the cassette to SAVE

You cannot record on the tape. Slide the REC/SAVE switch to REC.

We recommend that you add new sound on a tape recorded with your camcorder

If you add new sound on a tape recorded with another camcorder (including an other DSR-250P), the sound quality may deteriorate.

When dubbing through the MIC IN +48V connector or AUDIO IN CH1/CH2 connectors

You can adjust the recording level manually (p. 54).

Notes on AUDIO MODE

- You cannot dub audio sound on a tape recorded in the F548K (16-bit) mode.
- When playing back a tape recorded in the F548K (16-bit) mode, you cannot adjust the balance in AUDIO MIX.

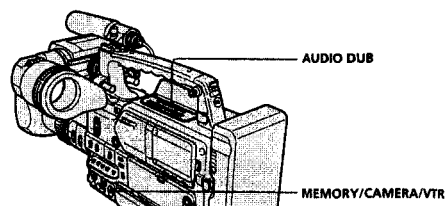
Editing

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Audio dubbing

Adding an audio sound on a recorded tape

- (1) Insert the recorded tape into your camcorder.
- (2) Set the MEMORY/CAMERA/VTR selector to VTR on your camcorder.
- (3) Locate the recording start point by pressing . Then press at the point where you want to start recording to set your camcorder to the playback pause mode.
- (4) Press . The green indicator appears on the LCD screen or in the viewfinder.
- (5) Press and start playing back the audio you want to record at the same time. The new sound is recorded in channels 3/4 during playback.
- (6) Press at the point where you want to stop recording.



Editing

Notes

- When dubbing with the AUDIO IN/OUT CH-1/CH-2 jacks, you can check the recorded picture on the LCD screen or in the viewfinder, and you can check the recorded sound by using headphones.
- When dubbing with the supplied or an external microphone, you can check the recorded picture on the LCD screen, in the viewfinder, or on the screen of equipment connected with the VIDEO IN/OUT jack or VIDEO OUT connector, and you can check the recorded sound by using headphones.

On blank portions

You cannot add an audio.

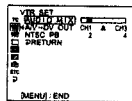
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Audio dubbing

Monitoring the new recorded sound

To play back the sound

First, select channels using the AUDIO MONITOR selector, then adjust the balance between the channels 1/2 (CH1/2) and the channels 3/4 (CH3/4) by selecting AUDIO MIX in the menu settings (p. 120).



The default setting is for original sound only.

If you set the audio balance beforehand, you can monitor both the original sound and dubbed sound during the dubbing.

Setting time values

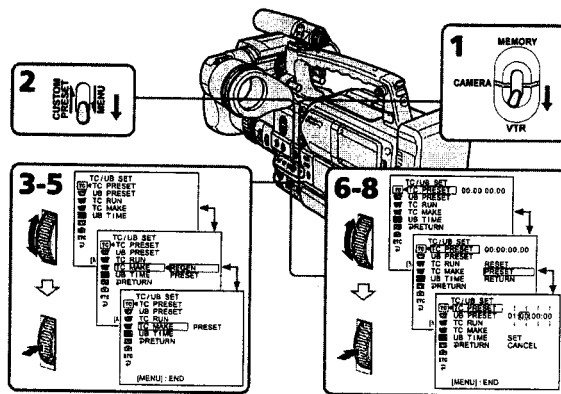
The camcorder uses two types of time values: time code values and user bits. The time value is displayed on the LCD screen, in the viewfinder, or on the display window.

The user bits are convenient when using multiple cameras at the same event. When you record the picture, time code data will be recorded automatically.

Setting the time code value

This section describes the steps for setting time code recording methods for particular shooting conditions and setting initial values.

- (1) Set the MEMORY/CAMERA/VTR selector to VTR or CAMERA.
- (2) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu.
- (3) Turn the SEL/PUSH EXEC dial to select TC, then press the dial.
- (4) Turn the SEL/PUSH EXEC dial to select TC MAKE, then press the dial.
- (5) Turn the SEL/PUSH EXEC dial to select PRESET, then press the dial.
- (6) Turn the SEL/PUSH EXEC dial to select TC PRESET, then press the dial.
- (7) Turn the SEL/PUSH EXEC dial to select PRESET, then press the dial.
- (8) Set up the first two digits. Turn the SEL/PUSH EXEC dial to select the number, then press the dial. The time code is set between 00:00:00:00 and 23:59:59:29.
- (9) Repeat step 8 to set up the other digits.



Editing

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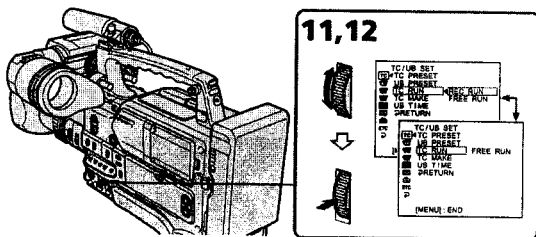
Setting time values

- (10) Turn the SEL/PUSH EXEC dial to select SET, then press the dial.
- (11) Turn the SEL/PUSH EXEC dial to select TC RUN, then press the dial.
- (12) Turn the SEL/PUSH EXEC dial to select the desired running mode, then press the dial.

REC RUN: Time code value advances only while recording. When making the time code continuous at back space editing, select this setting.

FREE RUN: Time code advances freely regardless of the camcorder's current operation mode.

For more information on the running mode, see "Making the time code continuous at back space editing" on page 107.



To cancel the time code setting

Select CANCEL in step 10, then press the SEL/PUSH EXEC dial.

To reset the time code

Select RESET in step 7, then press the SEL/PUSH EXEC dial.

Note

Time data can be set only in DVCAM mode.

Setting time values

Making the time code continuous at back space editing

Set TC MAKE to REGEN in the menu settings to make the time code continuous when the recording has been interrupted or when the cassette tape has been removed from the camcorder between shootings.

When the camcorder is in recording pause mode, the recorded time code is read from the tape and synchronized to the internal time code generator.

Once you set TC MAKE to REGEN in the menu settings

Even if TC RUN is set to FREE RUN in the menu settings, the running mode is automatically set to REC RUN.

Editing

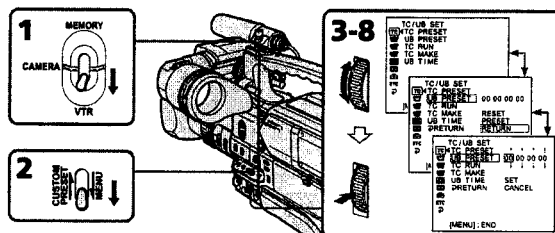
106

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Setting time values

Setting the user bits value

- You can set the user bits as eight-digit hexadecimal values (base 16) to have the date, time, scene number, and other information inserted into the time code.
- (1) Set the MEMORY/CAMERA/VTR selector to VTR or CAMERA.
 - (2) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu.
 - (3) Turn the SEL/PUSH EXEC dial to select TC, then press the dial.
 - (4) Turn the SEL/PUSH EXEC dial to select UB PRESET, then press the dial.
 - (5) Turn the SEL/PUSH EXEC dial to select PRESET, then press the dial.
 - (6) Set up the first two digits. Turn the SEL/PUSH EXEC dial to select the number, then press the dial.
 - (7) Repeat step 6 to set up the other digits.
 - (8) Turn the SEL/PUSH EXEC dial to select SET, then press the dial.



To cancel the user bits setting

Select CANCEL in step 8, then press the SEL/PUSH EXEC dial.

To reset the user bits

Select RESET in step 5, then press the SEL/PUSH EXEC dial.

To set the user bits to the real time clock

Set UB TIME to ON in the menu settings.

Note

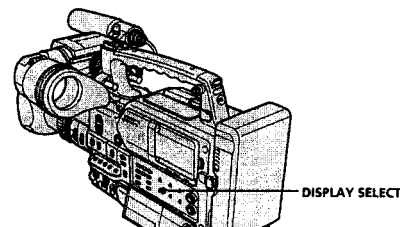
User bits can be set only in DVCAM mode.

If the date and time have not been set

User bits cannot be set.

Setting time values

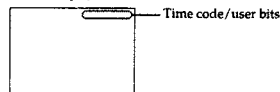
Switching the time value



Switch the DISPLAY SELECT switch as follows:

TC: Displays the time code. This is indicated as "00:00:00:00".

U-BIT: Displays user bits. This is indicated as "00 00 00 00".



Note

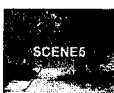
The time code and user bits cannot be displayed properly if the tape does not have time code and/or user bits recordings or if the time code was recorded using a non-compatible method.

108

Superimposing a title

CM only If you use a tape with cassette memory, you can superimpose the title while recording or after recording. When you play back the tape, the title is displayed for five seconds from the point where you superimposed it.

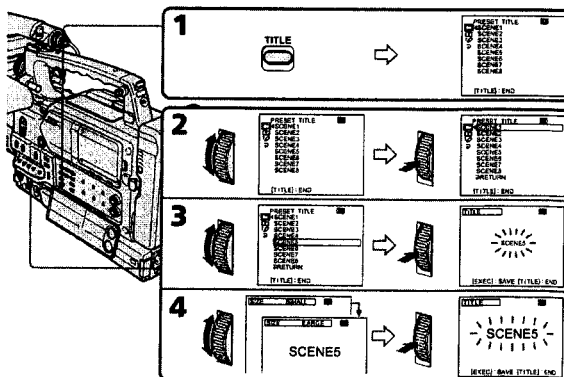
You can select one of eight preset titles and two custom titles (p. 114).



You can also select the colour, size and position of titles.

- (1) Press TITLE to display the title menu in standby, recording, playback, or playback pause mode.
- (2) Turn the SEL/PUSH EXEC dial to select , then press the dial.
- (3) Turn the SEL/PUSH EXEC dial to select the desired title, then press the dial. The title flashes.
- (4) Change the colour, size, or position, if necessary.
 - ① Turn the SEL/PUSH EXEC dial to select the COLOUR, SIZE, or POSITION, then press the dial. The item appears.
 - ② Turn the SEL/PUSH EXEC dial to select the desired item, then press the dial.
 - ③ Repeat steps 1 and 2 until the title is laid out as desired.
- (5) Press the SEL/PUSH EXEC dial again to complete the setting. In playback, playback pause, or recording mode: The "TITLE SAVE" indicator appears on the screen for five seconds and the title is set. In standby mode: The "TITLE" indicator appears. When you press START/STOP to start recording, "TITLE SAVE" appears on the screen for five seconds and the title is set.

Superimposing a title



If you set the REC/SAVE switch of the cassette to SAVE

You cannot superimpose or erase the title. Slide the REC/SAVE switch to REC.

To use a custom title

If you want to use the custom title, select  in step 2.

If the tape has a blank portion

You cannot superimpose a title on that portion.

If the tape has a blank portion in the middle of the recorded parts

The title may not be displayed correctly.

The titles superimposed with your camcorder

The point you superimposed the title may be detected as an index signal when searching a recording with other video equipment.

To not display titles

Set TITLE DSPL to OFF in the menu settings (p. 120).

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Superimposing a title

Title setting

- The title colour changes as follows:
WHITE ↔ YELLOW ↔ VIOLET ↔ RED ↔ CYAN ↔ GREEN ↔ BLUE
- The title size changes as follows:
SMALL ↔ LARGE
- You cannot input more than 12 characters in LARGE size.
- If you select the title size "SMALL," you have nine choices for the title position.
- If you select the title size "LARGE," you have eight choices for the title position.

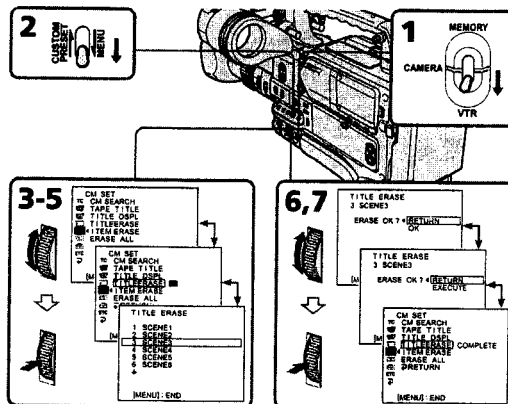
If the "CM FULL" mark appears

The cassette memory is full. If you erase the title, index data, date data, photo data, or cassette label in the cassette, you can then superimpose a title.

Superimposing a title

Erasing a title

- Set the MEMORY/CAMERA/VTR selector to VTR or CAMERA.
- Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu.
- Turn the SEL/PUSH EXEC dial to select , then press the dial.
- Turn the SEL/PUSH EXEC dial to select TITLEERASE, then press the dial. The title erase display appears.
- Turn the SEL/PUSH EXEC dial to select the title you want to erase, then press the dial. The "ERASE OK?" indicator appears.
- Make sure the title is the one you want to erase, and turn the SEL/PUSH EXEC dial to select OK, then press the dial. "OK" changes to "EXECUTE."
- Press the SEL/PUSH EXEC dial. "ERASING" flashes for about two seconds and "COMPLETE" appears after erasing the title.



To cancel erasing

Select RETURN in step 6 or 7, then press the SEL/PUSH EXEC dial.

To erase all the titles

See "Erasing the cassette memory data" on page 118.

Editing

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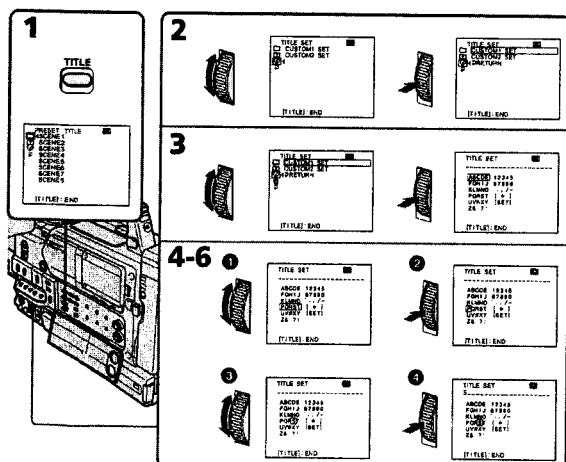
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Making your own titles



You can make up to two titles and store them in cassette memory. Each title can have up to 20 characters.

- Press TITLE in the standby, playback, or playback pause mode.
- Turn the SEL/PUSH EXEC dial to select , then press the dial.
- Turn the SEL/PUSH EXEC dial to select CUSTOM1 SET or CUSTOM2 SET, then press the dial.
- Turn the SEL/PUSH EXEC dial to select the column of the desired character, then press the dial.
- Turn the SEL/PUSH EXEC dial to select the desired character, then press the dial.
- Repeat steps 4 and 5 until you have selected all characters and completed the title.
- To finish making your own titles, turn the SEL/PUSH EXEC dial to select [SET], then press the dial. The title is stored in memory.
- Press TITLE to make the title menu disappear.



Making your own titles

To change a title you have stored

In step 3, select CUSTOM1 SET or CUSTOM2 SET, depending on which title you want to change, then press the SEL/PUSH EXEC dial. Turn the SEL/PUSH EXEC dial to select , then press the dial to delete the title. The last character is erased. Enter a new title as desired.

To erase a character

Turn the SEL/PUSH EXEC dial to select , then press the dial. The last character is erased.

To enter a space

Select [Z & ?], then select the blank part.

Editing

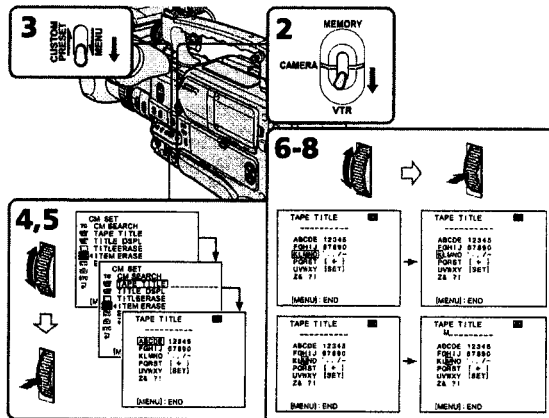
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Labelling a cassette

CM only If you use a tape with cassette memory, you can label a cassette. The label can consist of up to 10 characters and is stored in cassette memory. When you insert the labelled cassette and set the MEMORY/CAMERA/VTR selector to VTR, CAMERA, or MEMORY, the label is displayed for about five seconds.

- (1) Insert the cassette you want to label.
- (2) Set the MEMORY/CAMERA/VTR selector to VTR or CAMERA.
- (3) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu.
- (4) Turn the SEL/PUSH EXEC dial to select **■**, then press the dial.
- (5) Turn the SEL/PUSH EXEC dial to select TAPE TITLE, then press the dial. The tape title display appears.
- (6) Turn the SEL/PUSH EXEC dial to select the column of the desired character, then press the dial.
- (7) Turn the SEL/PUSH EXEC dial to select the desired character, then press the dial.
- (8) Repeat steps 6 and 7 until you finish the label.
- (9) Turn the SEL/PUSH EXEC dial to select [SET], then press the dial. The label is stored in memory.



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Labelling a cassette

To change the label you have made

Insert the cassette to change the label, and operate in the same way as you do to make a new label.

If you set the REC/SAVE switch of the cassette to SAVE

You cannot label the tape. Slide the REC/SAVE switch to REC.

If you have superimposed titles in the cassette

When the label is displayed, up to four titles also appear.

When the "----" indicator has fewer than 10 spaces

The cassette memory is full.

The "----" indicates the number of characters you can select for the label.

To erase a character

Turn the SEL/PUSH EXEC dial to select [←], then press the dial. The last character is erased.

To enter a space

Select [Z & ? !], then select the blank part.

Editing

Erasing the cassette memory data

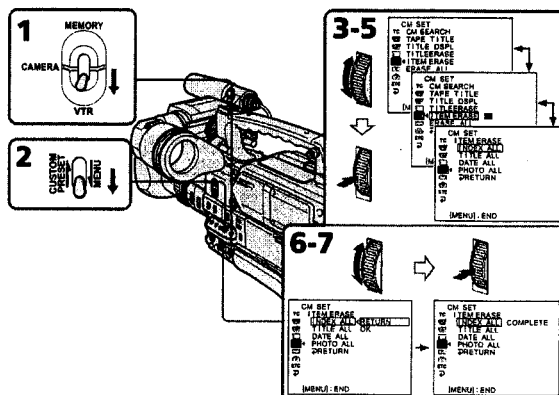
You can erase data stored in cassette memory, each item's data can be erased separately. You can also erase all items' data once.

Erasing each item's data separately

- (1) Set the MEMORY/CAMERA/VTR selector to VTR or CAMERA.
- (2) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu.
- (3) Turn the SEL/PUSH EXEC dial to select **■**, then press the dial.
- (4) Turn the SEL/PUSH EXEC dial to select ITEM ERASE, then press the dial.
- (5) Turn the SEL/PUSH EXEC dial to select the item that you want to erase its data, then press the dial.

Item	Meaning
INDEX ALL	Erases all the index data.
TITLE ALL	Erases all the title data.
DATE ALL	Erases all the date data.
PHOTO ALL	Erases all the photo data.

- (6) Turn the SEL/PUSH EXEC dial to select OK, then press the dial. "OK" changes to "EXECUTE."
- (7) Press the SEL/PUSH EXEC dial. "ERASING" flashes for about two seconds and "COMPLETE" appears after erasing the selected item's data.



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Erasing the cassette memory data

To cancel erasing

Select RETURN in step 6 or 7, then press the SEL/PUSH EXEC dial.

Erasing all the data in cassette memory

- (1) Set the MEMORY/CAMERA/VTR selector to VTR or CAMERA.
- (2) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu.
- (3) Turn the SEL/PUSH EXEC dial to select **■**, then press the dial.
- (4) Turn the SEL/PUSH EXEC dial to select ERASE ALL, then press the dial.
- (5) Turn the SEL/PUSH EXEC dial to select OK, then press the dial. "OK" changes to "EXECUTE."
- (6) Press the SEL/PUSH EXEC dial. "ERASING" flashes for about two seconds and "COMPLETE" appears after erasing all the data.

To cancel erasing

Select RETURN in step 5 or 6, then press the SEL/PUSH EXEC dial.

Once you execute ERASE ALL

The tape title is also erased in addition to items described on page 118.

Editing

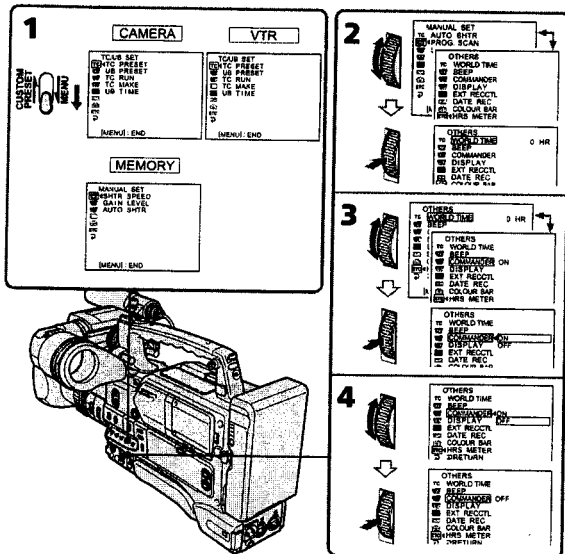
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Changing the menu settings

To change the mode settings in the menu settings, select the menu items with the SEL/PUSH EXEC dial. The default settings can be partially changed. First, select the icon, then the menu item and then the mode.

- (1) In the standby, VTR, or MEMORY mode, push the CUSTOM PRESET/MENU switch in the MENU direction and release it.
- (2) Turn the SEL/PUSH EXEC dial to select the desired icon, then press the dial to set it.
- (3) Turn the SEL/PUSH EXEC dial to select the desired item, then press the dial to set it.
- (4) Turn the SEL/PUSH EXEC dial to select the desired mode, then press the dial to set it.
- (5) If you want to change other items, select $\Rightarrow$ RETURN and press the dial, then repeat steps 2 to 4.

For details, see "Selecting the mode setting of each item" (p. 121).



Changing the menu settings

To make the menu display disappear

Push the CUSTOM PRESET/MENU switch in the MENU direction and release it.

Menu items are displayed as the following icons:

- ☒ TC/UB SET
- ☒ MANUAL SET
- ☒ CAMERA SET
- ☒ VTR SET
- ☒ LCD SET
- ☒ MEMORY SET
- ☒ CM SET
- ☒ TAPE SET
- ☒ SETUP MENU
- ☒ OTHERS

Selecting the mode setting of each item

● is the default setting.

Menu items differ depending on the position of the MEMORY/CAMERA/VTR selector. The LCD screen or viewfinder screen shows only the items you can operate at the moment.

Icon/item	Mode	Meaning	MEMORY/CAMERA/VTR selector
TC PRESET	—	Presets/resets the time code (p. 105).	VTR CAMERA
UB PRESET	—	Presets/resets user bits (p. 108).	VTR CAMERA
TC RUN	● REC RUN	Time code value advances only while recording. When making the time code continuous at back space editing, select this setting.	VTR CAMERA
	FREE RUN	Time code advances freely regardless of the camcorder's current operation mode. When adjusting the discrepancy between time code value and real time.	
TC MAKE	● REGEN	Makes the time code continuous at back space editing. Regardless of the TC RUN setting, the running mode is automatically set to REC RUN.	VTR CAMERA
	PRESET	Does not make the time code continuous at back space editing.	
UB TIME	● OFF	Does not set user bits to the real time clock.	VTR
	ON	Sets user bits to the real time clock.	CAMERA

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Changing the menu settings

Icon/item	Mode	Meaning	MEMORY/CAMERA/VTR selector
SHTR SPEED	—	Adjusts the shutter speed.	CAMERA MEMORY
GAIN LEVEL	—	To set gain values of H (High), M (Middle), and L (Low) positions.	CAMERA MEMORY
AUTO SHTR	● ON	To automatically adjust the electronic shutter speed.	CAMERA MEMORY
	OFF	To fix the electronic shutter speed.	
PROG. SCAN	● OFF	Records still/moving pictures in the interlace format.	CAMERA
	ON	Records still/moving pictures in progressive mode.	
D ZOOM	● OFF	To deactivate the digital zoom. Up to 12x zoom is performed digitally. This value goes up to 24x (p. 25).	CAMERA
	24x	To activate the digital zoom. More than 12x zoom is performed digitally. This value goes up to 24x (p. 25).	
	48x	To activate the digital zoom. More than 12x zoom is performed digitally. This value goes up to 48x (p. 25).	
16:9WIDE	● OFF	—	CAMERA
	ON	To record a 16:9 wide picture (p. 66).	
STEADYSHOT	● ON	To compensate for camera-shake.	CAMERA MEMORY
	OFF	To cancel the SteadyShot function. Natural pictures are produced when shooting a stationary object with a tripod.	
FRAME REC	● OFF	Does not make a cut recording.	CAMERA
	ON	Makes a cut recording (p. 76).	
INT. REC	● OFF	Makes an interval recording (p. 74).	CAMERA
	ON	Does not make an interval recording.	
	SET	Sets the interval time and recording time.	

Notes on the SteadyShot function

- * The SteadyShot function will not correct excessive camera-shake.
- * Attachment of a conversion lens (not supplied) may influence the SteadyShot function.

If you cancel the SteadyShot function

The SteadyShot OFF indicator $\Rightarrow$ appears. Your camcorder prevents excessive compensation for camera-shake.

Changing the menu settings

Icon/item	Mode	Meaning	MEMORY/CAMERA/VTR selector
AUDIO MIX	—	To adjust the balance between the channels 1/2 (CH1/2) and channels 3/4 (CH3/4) (p. 104).	VTR
		CH1 2 CH3 4	
A/V→DV OUT	● OFF	To output analog images in digital format using your camcorder.	VTR
	ON	To output digital images in analog format using your camcorder.	
NTSC PB	● ON PAL TV	To play back a tape recorded on your camcorder on a PAL system TV.	VTR
	NTSC 4.43	To play back a tape recorded in the NTSC colour system on a TV with the NTSC 4.43 mode.	
LCD COLOUR	—	To adjust the colour on the LCD screen with the SEL/PUSH EXEC dial.	VTR CAMERA MEMORY
		To get low-intensity To get high-intensity	
GUIDEFAME	● OFF	Does not display the guide frame.	CAMERA
	ON	Displays the guide frame (p. 52).	MEMORY
CONTINUOUS	● OFF	Not to record continuously.	MEMORY
	ON	To record four images continuously (p. 135).	
	MULTI SCRN	To record nine images continuously (p. 135).	
QUALITY	● SUPER FINE	To record still images in the super fine image quality mode, using a "Memory Stick" (p. 132).	VTR MEMORY
	FINE	To record still images in the fine image quality mode, using a "Memory Stick" (p. 132).	
	STANDARD	To record still images in the standard image quality mode, using a "Memory Stick" (p. 132).	

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Changing the menu settings

Icon/Item	Mode	Meaning	MEMORY/ CAMERA/ VTR selector
PRINT MARK	● OFF	To erase print marks on still images.	VTR
	ON	To write a print mark on the recorded still images you want to print out later.	MEMORY
PROTECT	● OFF	To release protection from still images.	VTR
	ON	To protect selected still images against accidental erasure (p. 149).	MEMORY
SLIDE SHOW	—	To play back all the images as a slide show (p. 148).	MEMORY
DELETE ALL	—	To delete all unprotected images (p. 152).	MEMORY
FORMAT	● RETURN	To cancel formatting.	MEMORY
	OK	To format an inserted "Memory Stick." 1. Select FORMAT with the SEL/PUSH EXEC dial, then press the dial. 2. Turn the SEL/PUSH EXEC dial to select OK, then press the dial. 3. After "EXECUTE" appears, press the SEL/PUSH EXEC dial. "FORMATTING" appears during formatting. "COMPLETE" appears when formatting is finished.	MEMORY
PHOTO SAVE	—	To duplicate images on a tape onto a "Memory Stick" (p. 140).	VTR
CM SEARCH	● ON	To search using cassette memory (p. 77, 79, 80, 82).	VTR
	OFF	To search without using cassette memory.	VTR
TAPE TITLE	—	To label a cassette (p. 116).	VTR CAMERA
TITLE DSPL	● ON	To display the title you have superimposed.	VTR
	OFF	Not to display the title.	VTR
TITLEERASE	—	To erase the title you have superimposed (p. 113).	VTR CAMERA

Formatting erases all information on the "Memory Stick"

- Check the contents of the "Memory Stick" before formatting:
- Formatting erases sample images on the "Memory Stick."
- Formatting erases the protected image data on the "Memory Stick."

Notes on formatting

- Supplied or optional "Memory Stick"s have been formatted at the factory. Formatting with this camcorder is not required.
- While the display shows "FORMATTING," do not change the position of the MEMORY/CAMERA/VTR selector, press any button, or eject the "Memory Stick." This may cause a malfunction.
- You cannot format a "Memory Stick" if the write-protect tab on the "Memory Stick" is set to LOCK.
- Format again if the message "X" appears.

If formatting fails

The "X" FORMAT ERROR" message appears.

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Changing the menu settings

Icon/Item	Mode	Meaning	MEMORY/ CAMERA/ VTR selector
ITEM ERASE	—	To erase each item's data in cassette memory (p. 118).	VTR CAMERA
	ERASE ALL	To erase all the data in cassette memory (p. 119).	VTR CAMERA
REC MODE	● DVCAM	To record in the DVCAM format.	VTR
	DV SP	To record in the DV format (SP mode).	CAMERA
AUDIO MODE	● FS32K	To record in Fs32K (12-bit) mode (4-channel sounds).	VTR CAMERA
	FS48K	To record in Fs48K (16-bit) mode (2-channel sounds with high quality).	VTR
REMAIN	● AUTO	To display the remaining tape indication: • for about eight seconds after your camcorder is turned on and calculates the remaining amount of tape • for about eight seconds after a cassette is inserted and your camcorder calculates the remaining amount of tape • for about eight seconds after ► is pressed in VTR mode • for about eight seconds after DISPLAY is pressed to display the screen indicators • for the period of tape rewinding, forwarding or picture search in the VTR mode	VTR CAMERA
	ON	To always display the remaining tape indicator.	VTR
DATA CODE	● DATE/CAM	To display date, time and various settings during playback.	VTR
	DATE	To display date and time during playback.	VTR
A REF LVL	● -12dB	Sets the audio reference level to -12 dB.	VTR
	-18dB	Sets the audio reference level to -18 dB.	CAMERA

Notes on AUDIO MODE

- You cannot dub audio sound on a tape recorded in the Fs48K (16-bit) mode.
- When playing back a tape recorded in the Fs48K (16-bit) mode, you cannot adjust the balance in AUDIO MIX.

Note on REC MODE

- You cannot dub any audio sound on a tape recorded in the DV format (SP mode), even if you recorded it in Fs32K (12-bit) mode.

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Changing the menu settings

Icon/Item	Mode	Meaning	MEMORY/ CAMERA/ VTR selector
CLOCK SET	—	To reset the date or time (p. 128).	CAMERA MEMORY
LTR SIZE	● NORMAL	To display selected menu items in normal size.	VTR CAMERA
	2x	To display selected menu items at twice the normal size.	MEMORY
REMAIN	● LI-ION	Selects when attaching a lithium-ion battery pack.	VTR CAMERA
	NI-CD	Selects when attaching a nicad battery pack.	MEMORY
LOGO INS	—	To always insert the still image on the moving picture. For details, refer to the operating instructions ("Auto Logo Insert for Copyright Protection") supplied with this camcorder.	CAMERA
WORLD TIME	—	To set the clock to the local time. Turn the SEL/PUSH EXEC dial to set a time difference. The clock changes by the time difference you set here. If you set the time difference to 0, the clock returns to the originally set time.	CAMERA MEMORY
BEEP	MELODY	To chime a melody in normal operations, and beep a warning sound for five seconds.	VTR CAMERA
	● NORMAL	To beep in the following situations: turning on the power, pressing the start/stop button, and when a warning message appears.	MEMORY
	OFF	To cancel the melody, beep, and shutter click sound.	VTR
COMMANDER	● ON	To activate the Remote Commander supplied with your camcorder.	VTR CAMERA
	OFF	To deactivate the Remote Commander to avoid remote control misoperation caused by an other VCR's remote control.	MEMORY

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Changing the menu settings

Icon/Item	Mode	Meaning	MEMORY/ CAMERA/ VTR selector
DISPLAY	● LCD	To show the display on the LCD screen and viewfinder screen.	VTR CAMERA
	V-OUT/LCD	To show the display on a TV screen, LCD screen and viewfinder screen.	MEMORY
EXT RECCTL	● OFF	Does not synchronize the START/STOP button on this camcorder and recording/recording pause operations of the VCR connected with the DV connecting cable (i.LINK cable).	CAMERA
	ON	Synchronizes the START/STOP button on this camcorder and recording/recording pause operations of the VCR connected with the DV connecting cable (i.LINK cable).	VTR
DATE REC	● OFF	To not superimpose the date and time on the picture.	CAMERA
	ON	To superimpose the date and time on the picture.	VTR
COLOUR BAR	● OFF	Does not display the colour bar.	CAMERA
	ON	Displays the colour bar.	VTR
VIDEO EDIT	—	To make programs and perform video editing (p. 91).	VTR
EDIT SET	—	To adjust and set the synchronization of your camcorder and a VCR for dubbing in edit set mode (p. 89).	VTR
HRS METER	OPERATION	The cumulative total hours of operation is displayed in 10-operation increments.	VTR CAMERA
	DRUM RUN	The cumulative total hours of drum rotation with tape threaded is displayed in 10-operation increments.	VTR
	TAPE RUN	The cumulative total hours of tape running is displayed in 10-operation increments.	VTR
	THREADING	The cumulative number of tape unthreading operation is displayed in 10-operation increments.	VTR

Notes

- If you press DISPLAY with DISPLAY set to V-OUT/LCD in the menu settings, the picture from a TV or VCR will not appear on the LCD screen even when your camcorder is connected to outputs on the TV or VCR (except using a DV connecting cable (i.LINK cable)).
- You cannot erase the date and time superimposed using the DATE REC function.

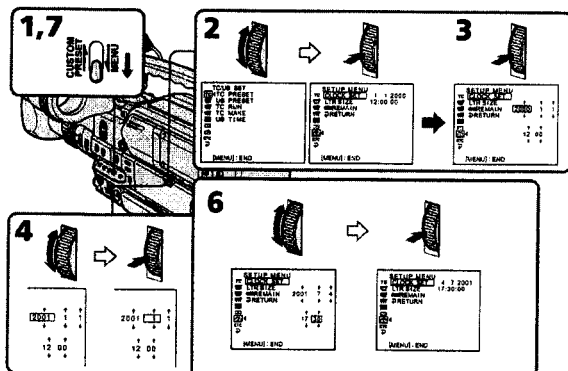
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Resetting the date and time

The date and time are set at the factory. Set the time according to the local time in your country. If you remove power sources from your camcorder for about four months, the date and time settings may be released because the vanadium-lithium battery installed in your camcorder will have been discharged (p. 174).

First, set the year, then the month, the day, the hour and then the minute.

- (1) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu in the standby mode.
- (2) Turn the SEL/PUSH EXEC dial to select , then press the dial.
- (3) Turn the SEL/PUSH EXEC dial to select CLOCK SET, then press the dial.
- (4) Turn the SEL/PUSH EXEC dial to adjust to the desired year, then press the dial.
- (5) Set the month, day and hour by turning the SEL/PUSH EXEC dial and pressing the dial.
- (6) Set the minute by turning the SEL/PUSH EXEC dial and pressing the dial by the time signal. The clock starts to move.
- (7) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to make the menu settings disappear.



The year changes as follows:

1995 2000 ↔ 2001 2079

If you do not set the date and time

"--:--:--" as time, and "-- -- --" as date will be recorded.

Note on the time indicator

The internal clock of this camcorder operates on a 24-hour cycle.

— "Memory Stick" Operations —

Using a "Memory Stick" – introduction

You can record and play back still images on the "Memory Stick" supplied with your camcorder. You can easily play back, record or delete still images. You can exchange image data with other equipment such as a personal computer etc., using the Memory Stick Reader/Writer supplied with your camcorder or a PC card adaptor for Memory Stick (not supplied).

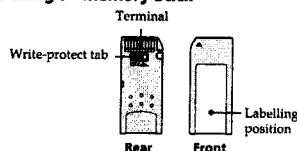
On file format (JPEG)

Your camcorder compresses image data in JPEG format (extension .jpg).

Typical image data file name

100-0001: As displayed on the LCD screen or in the viewfinder of the camcorder.
Dsc00001.jpg: As displayed on your PC screen.

Before using a "Memory Stick"



- You cannot record or erase still images when the write-protect tab on the "Memory Stick" is set to LOCK.
- We recommend backing up important data.
- Image data may be damaged in the following cases:
 - If you remove the "Memory Stick," turn the power off, or detach the battery for replacement when the access lamp is flashing.
 - If you use a "Memory Stick" near static electricity or magnetic fields.

Notes

- Prevent metallic objects or your finger from coming into contact with the metal parts of the connecting section.
- Do not attach any other material than the supplied label onto the label space.
- Do not bend, drop or apply strong shock to a "Memory Stick."
- Do not disassemble or modify a "Memory Stick."
- Do not let the "Memory Stick" get wet.
- Do not use or keep a "Memory Stick" in locations that are:
 - Extremely hot such as in a car parked in the sun or under the scorching sun.
 - Under direct sunlight.
 - Very humid or subject to corrosive gases.
- When you carry or store a "Memory Stick," put it in its case.

A "Memory Stick" formatted by a computer

A "Memory Stick" formatted by the Windows OS or Macintosh computers does not have a guaranteed compatibility with this camcorder.

Using a "Memory Stick" – introduction

Notes on image data compatibility

- Image data files recorded on a "Memory Stick" by your camcorder conform to the Design Rules for Camera File Systems universal standard (DCF98 standard) established by the JEIDA (Japan Electronic Industry Development Association). You cannot play back on your camcorder still images recorded on other equipment (DCR-TRV890E/TRV900/TRV900E or DSC-D700/D770) that does not conform to this universal standard. (These models are not sold in some areas.)
- If you cannot use a "Memory Stick" that is used with other equipment, format it with this camcorder (p. 124). However, formatting erases all information on the "Memory Stick."

"Memory Stick" and  are trademarks of Sony Corporation.

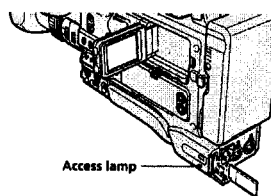
- Windows is a registered trademark licensed to Microsoft Corporation, registered in the U.S.A. and other countries.
- Macintosh and Mac OS are trademarks of Apple Computer, Inc.
- All other product names mentioned herein may be the trademarks or registered trademarks of their respective companies.

Furthermore, "TM" and "®" are not mentioned in each case in this manual.

Using a "Memory Stick" – introduction

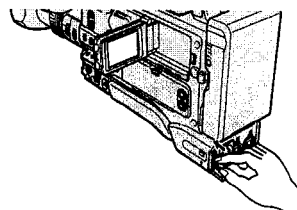
Inserting a "Memory Stick"

Open the "Memory Stick" cover, and insert the "Memory Stick" with the Sony logo pointing toward the LCD panel and the  mark pointing inward.



To eject a "Memory Stick"

Open the "Memory Stick" cover, and push the "Memory Stick" inward, then release your finger. The "Memory Stick" comes out a little.



When the access lamp is lit or flashing

Never shake or strike your camcorder. Do not turn the power off, eject a "Memory Stick" or remove the battery pack. Otherwise, image data breakdown may occur.

If the MEMORY STICK ERROR indicator appears

The "Memory Stick" is broken. Use another "Memory Stick."

Using a "Memory Stick" – introduction

Selecting the image quality mode

You can select the image quality mode in still picture recording. The default setting is SUPER FINE.

- (1) Set the MEMORY/CAMERA/VTR selector to VTR or MEMORY.
- (2) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu.
- (3) Turn the SEL/PUSH EXEC dial to select , then press the dial.
- (4) Turn the SEL/PUSH EXEC dial to select QUALITY, then press the dial.
- (5) Turn the SEL/PUSH EXEC dial to select the desired image quality, then press the dial.

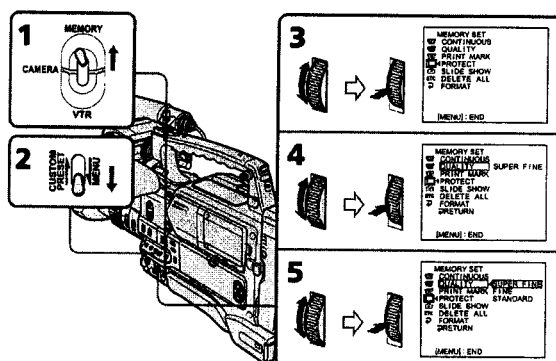


Image quality settings

Setting	Meaning
SUPER FINE	This is the highest image quality in this camcorder. The number of still images you can record is fewer than FINE. The image is compressed to about 1/3.
FINE	Use this mode when you want to record high quality images. The image is compressed to about 1/6.
STANDARD	This is the standard image quality. The image is compressed to about 1/10.

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Using a "Memory Stick" – introduction

Note

In some cases, changing the image quality mode may not affect the image quality, depending on the types of images you are shooting.

Differences in image quality mode

Recorded images are compressed in JPEG format before being stored in memory. The memory capacity allotted to each image varies depending on the image quality mode selected. Details are shown in the table below.

Image quality mode	Memory capacity
SUPER FINE	Approx. 190 KB
FINE	Approx. 100 KB
STANDARD	Approx. 60 KB

Note on the image quality mode indicator

This is only displayed during recording.

The approximate number of images you can record on a "Memory Stick"

The approximate number of images you can record on a "Memory Stick" that is formatted using this camcorder varies depending on which image quality mode you select and the complexity of the subject.

	Image quality mode		
	SUPER FINE	FINE	STANDARD
4 MB type (supplied)	20 images	40 images	60 images
8 MB type (not supplied)	40 images	81 images	122 images
16 MB type (not supplied)	82 images	164 images	246 images
32 MB type (not supplied)	164 images	329 images	494 images
64 MB type (not supplied)	329 images	659 images	988 images

"Memory Stick" Operations

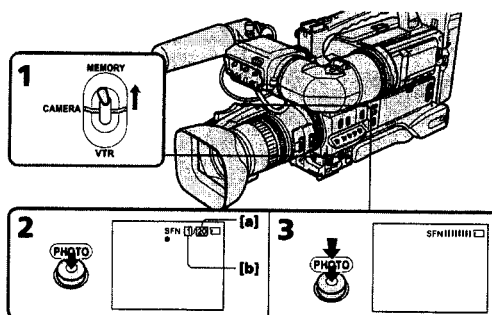
Recording still images on a "Memory Stick" – Memory Photo recording

You can record still images on a "Memory Stick."

Before operation

Insert a "Memory Stick" into your camcorder.

- (1) Set the MEMORY/CAMERA/VTR selector to MEMORY.
- (2) Keep pressing PHOTO lightly until the desired still picture appears. The green  mark stops flashing, then lights up. The brightness of the picture and focus are re-adjusted, being targeted for the middle of the picture and are fixed. Recording does not start yet.
- (3) Press PHOTO deeply. The shutter clicks and the image is frozen. The image displayed on the screen will be recorded on the "Memory Stick." Recording is complete when the bar scroll indicator disappears.



- [a] The number of images that can be recorded on the "Memory Stick"
[b] The number of recorded images

When the MEMORY/CAMERA/VTR selector is set to MEMORY

The following functions do not work: wide TV mode, digital effect, title, digital zoom, fader, and shutter speed (1/25 or smaller) adjustment.

Note

When you press the PHOTO button lightly at step 2, the focus of the image seems to be momentarily out.

When the auto logo insert function is activated

You cannot do memory photo recording. Refer to the extra operating instructions, "Auto Logo Insert for Copyright Protection."

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Recording still images on a "Memory Stick" – Memory Photo recording

While you are recording a still image

You can neither turn off the power nor press PHOTO.

When you press PHOTO on the Remote Commander

Your camcorder immediately records the image that is on the screen when you press the button.

Recording images continuously

You can record still images continuously. Select one of the two modes described below before recording.

Continuous mode [a]

You can record four still images continuously. The number of images is in accordance with remaining capacity of the "Memory Stick."

Multi screen mode [b]

You can record nine still images continuously and display them on a single page.

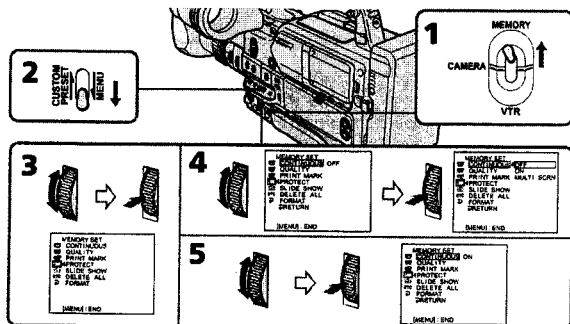


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Recording still images on a "Memory Stick" - Memory Photo recording

- (1) Set the MEMORY/CAMERA/VTR selector to MEMORY.
- (2) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu.
- (3) Turn the SEL/PUSH EXEC dial to select , then press the dial.
- (4) Turn the SEL/PUSH EXEC dial to select CONTINUOUS, then press the dial.
- (5) Turn the SEL/PUSH EXEC dial to select the desired setting, then press the dial.



Continuous shooting settings

Setting	Meaning (indicator on the screen)
OFF	Your camcorder shoots one image at a time. (no indicator)
ON	Your camcorder shoots up to four still images at about 0.5 sec intervals. ()
MULTI SCRN	Your camcorder shoots nine still images at about 0.5 sec intervals and displays the images on a single page divided into nine boxes. ()

If the capacity of the "Memory Stick" becomes full

" FULL" appears on the screen, and you cannot record still pictures on this "Memory Stick."

The number of images in continuous shooting

The number of images you can shoot continuously varies depending on the remaining capacity of the "Memory Stick." The shutter always clicks four times, however, the number of images recordable may be less than four.

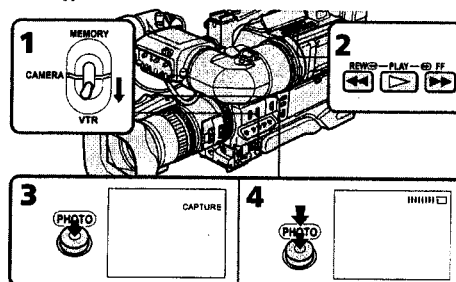
Recording an image from a tape as a still image

Your camcorder can read moving picture data recorded on a tape and record it as a still image on a "Memory Stick." Your camcorder can also take in moving picture data through the input connector and record it as a still image on a "Memory Stick."

Before operation

Insert a recorded tape and a "Memory Stick" into your camcorder.

- (1) Set the MEMORY/CAMERA/VTR selector to VTR.
- (2) Press . The picture recorded on the tape is played back.
- (3) Keep pressing PHOTO lightly until the picture from the tape freezes. "CAPTURE" appears on the LCD screen or in the viewfinder. Recording does not start yet.
- (4) Press PHOTO deeper. The image displayed on the screen will be recorded on a "Memory Stick." Recording is complete when the bar scroll indicator disappears.



When the access lamp is lit or is flashing

Never shake or strike the unit. Also, do not turn the power off, eject a "Memory Stick" or remove the battery pack. Otherwise, image data breakdown may occur.

If " FULL" appears on the LCD screen or in the viewfinder

The inserted "Memory Stick" is incompatible with your camcorder because its format does not conform to that of your camcorder. Check the format of the "Memory Stick."

If you press PHOTO lightly in the playback mode

The playback pauses momentarily.

Sound recorded on a tape

You cannot record the sound from a tape.

When the auto logo insert function is activated

You cannot use this function. Refer to the extra operating instructions, "Auto Logo Insert for Copyright Protection."

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Recording an image from a tape as a still image

Titles that are already recorded on tapes

You cannot record the titles on a "Memory Stick."

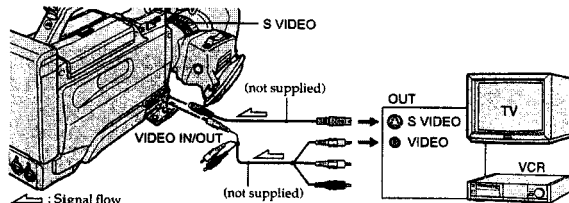
When you press PHOTO on the Remote Commander

Your camcorder immediately records the image that is on the screen when you press the button.

Recording a still image from other equipment

- (1) Set the MEMORY/CAMERA/VTR selector to VTR and set DISPLAY in  to LCD in the menu settings.
- (2) Play back the recorded tape, or turn the monitor on to see the desired program. The picture from the other equipment appears on the LCD screen or in the viewfinder.
- (3) Follow steps 3 and 4 on page 137.

When recording an image through the VIDEO IN/OUT jack



Connect the yellow plug of the A/V connecting cable to the video jack on the VCR or TV.

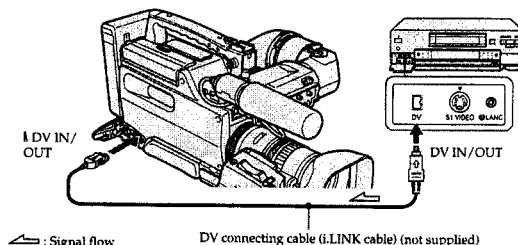
Connect using an S video cable (not supplied) to obtain high-quality pictures

With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable. Connect an S video cable (not supplied) to the S video jacks of both your camcorder and the VCR/TV.

This connection produces higher quality DVCAM/DV format pictures.

Recording an image from a tape as a still image

When recording the image through the i DV IN/OUT connector



 : Signal flow

DV connecting cable (i.LINK cable) (not supplied)

50F0426-00000202

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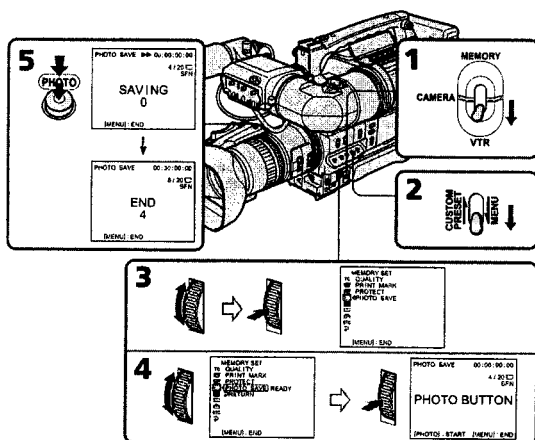
Copying still images from a tape – Photo save

Using the search function, you can automatically take in still images from tapes and record them on a "Memory Stick" in sequence.

Before operation

- Insert a recorded tape into your camcorder and rewind the tape.
- Insert a "Memory Stick" into your camcorder.

- (1) Set the MEMORY/CAMERA/VTR selector to VTR.
- (2) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu.
- (3) Turn the SEL/PUSH EXEC dial to select , then press the dial.
- (4) Turn the SEL/PUSH EXEC dial to select PHOTO SAVE, then press the dial. "PHOTO BUTTON" appears on the LCD screen or in the viewfinder.
- (5) Press PHOTO deeply. The still image from the tape is recorded on the "Memory Stick." The number of still images copied is displayed. "END" is displayed when copying is completed.



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Copying still images from a tape – Photo save

To cancel copying

Push the CUSTOM PRESET/MENU switch in the MENU direction and release it again.

When the memory of the "Memory Stick" is full

"MEMORY FULL" appears on the LCD screen or in the viewfinder, and the copying stops. Insert another "Memory Stick" and repeat the procedure from step 2.

Note

You can copy only still images to a "Memory Stick" and cannot change the order of still images copied.

When the access lamp is lit or flashing

Never shake or strike your camcorder. Also, do not turn the power off, eject the "Memory Stick" or remove the battery pack. Otherwise, the image data breakdown may occur.

To record all the images recorded on the tape

Rewind the tape all the way back and start copying.

If the write-protect tab on the "Memory Stick" is set to LOCK

"NOT READY" appears when you select the item in the menu settings.

When you change the "Memory Stick" in the middle of copying

Your camcorder resumes copying from the last image recorded on the previous "Memory Stick."

When the auto logo insert function is activated

You cannot use the photo save function. Refer to the extra operating instructions, "Auto Logo Insert for Copyright Protection."

Memory Stick® Operations

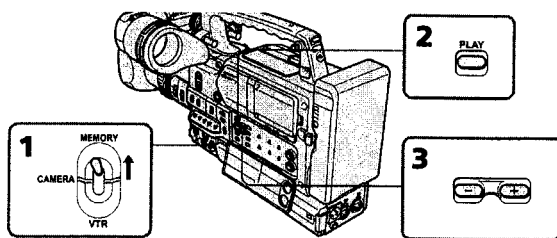
Viewing a still picture – Memory Photo playback

You can play back still images recorded on a "Memory Stick." You can also play back six images at a time by selecting the index screen.

Before operation

Insert a "Memory Stick" into your camcorder.

- (1) Set the MEMORY/CAMERA/VTR selector to VTR or MEMORY.
- (2) Press MEMORY PLAY. The last recorded image is displayed.
- (3) Press MEMORY +/- or +/- on the Remote Commander to select the desired still image. To see the previous image, press MEMORY - or - on the Remote Commander. To see the next image, press MEMORY + or + on the Remote Commander.



To stop memory photo playback

Press MEMORY PLAY again.

To play back recorded images on a monitor screen

- Connect your camcorder to the monitor with the A/V connecting cable before operation.
- When operating memory photo playback on a monitor or on the LCD screen, the image quality may appear to have deteriorated. This is not a malfunction. The image data is as good as ever.
- Turn the audio volume of the monitor down before operation, or noise (howling) may be output from the TV speakers.

When no images are recorded on the "Memory Stick"
The message "NO FILE" appears.

Image data modified with personal computers or shot with other equipment
You may not be able to play them back with your camcorder.

Note on the date/time indicator

Recording date/time is not displayed, however, it is automatically recorded on the "Memory Stick." You can check the recording date/time while in memory playback mode by pressing DATA CODE.

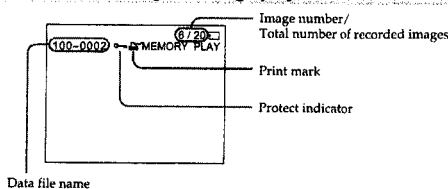
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Viewing a still picture – Memory Photo playback

When the auto logo insert function is activated

You cannot do memory photo playback. Refer to the extra operating instructions, "Auto Logo Insert for Copyright Protection."

Screen indicators during still image playback



On data file name

- When the hyphen is indicated between the directory and the file number, this data file name means that this file corresponds to the DCF98 standard.
- When the underbar is indicated between the directory and the file number, this data file name means that this file does not correspond to the DCF98 standard.
- The directory is not indicated if the file structure in the "Memory Stick" does not correspond to the DCF98 standard.
- The "DIRECTORY ERROR" message may appear if the file structure in the "Memory Stick" does not correspond to the DCF98 standard. In this case, you cannot record on that "Memory Stick," however, you can play back images in the "Memory Stick."
- When the data file name is flashes, the file may be broken or the file format does not correspond to your camcorder.

Memory Stick® Operations

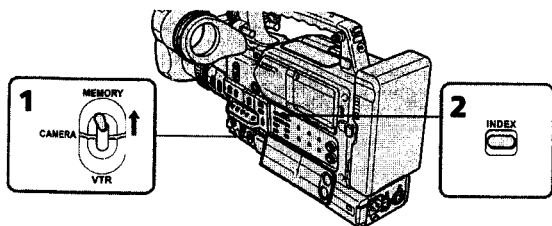
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Viewing a still picture - Memory Photo playback

Playing back six recorded images at a time (index screen)

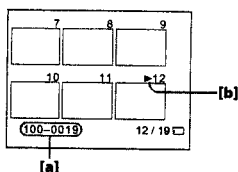
You can play back six recorded images at a time. This function is especially useful when searching for a particular image.

- (1) Set the MEMORY/CAMERA/VTR selector to VTR or MEMORY.
- (2) Press MEMORY INDEX to display the index screen.



A red ► mark appears above the image that is displayed before changing to the index screen mode.

MEMORY - : to display the previous six images
MEMORY + : to display the following six images



[a] File name
[b] ► mark

To return to the normal playback screen (single screen)

Press MEMORY +/- to move the ► mark to the image you want to display on full screen, then press MEMORY PLAY.

Viewing a still picture - Memory Photo playback

Files modified with personal computers

These files may not be displayed on the index screen. Image files shot with other equipment may not be displayed on the index screen either.

Note

When displaying the index screen, a number appears above each image. This indicates the order in which images are recorded on the "Memory Stick." These numbers are different from the data file names.

Viewing the recorded images using a personal computer

The image data recorded with your camcorder is compressed in the JPEG format. If you use the application software, "PictureGear 4.1 Lite" supplied with your camcorder, you can see images recorded on a "Memory Stick" on a computer screen. Use the Memory Stick Reader/Writer supplied with your camcorder, the Memory Stick/PC card kit or PC card adaptor for Memory Stick (not supplied) for this operation. For detailed instructions on operation, refer to the operating instructions of the Memory Stick Reader/Writer, Memory Stick/PC card kit or PC card adaptor for Memory Stick and your application software. For details, refer to the operating instructions of your accessory.

- Do not modify the directory of the file that corresponds to the DCF98 standard. The modified file will not be read.
- If you use the new "Memory Stick," be sure to use it first with this camcorder.

Recommended Windows environment

- OS: Microsoft Windows 98 standard installation
Operation in an environment upgraded to Windows 98 is not assured.
- CPU: MMX Pentium 200 MHz or faster

Recommended Macintosh environment

- OS: Mac OS system 8.5/8.6 standard installation
- Model: iMac/G3

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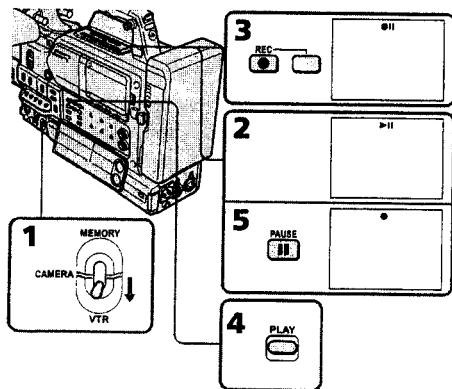
Copying an image recorded on a "Memory Stick" to tapes

You can copy still images or titles recorded on a "Memory Stick" and record them to a tape.

Before operation

Insert a tape for recording and a "Memory Stick" for playback into your camcorder.

- (1) Set the MEMORY/CAMERA/VTR selector to VTR.
- (2) Using the video control buttons, search for a point where you want to record the desired still image. Set the tape to playback pause mode.
- (3) Press ● REC and the button on its right simultaneously on your camcorder.
The tape is set to the recording pause mode.
- (4) Press MEMORY PLAY to play back the still image you want to copy.
- (5) Press II to start recording and press II again to stop.
- (6) If you have more to copy, repeat steps 4 and 5.



To stop copying in the middle

Press ■.

During copying

- You cannot operate the following buttons:
MEMORY PLAY, MEMORY INDEX, MEMORY DELETE, MEMORY +, MEMORY -, and MEMORY MIX.
- If you continue copying, do not use EDIT/SEARCH to search for the point where you want to record the desired still image. If you do, the playback image disappears from the screen.

Copying an image recorded on a "Memory Stick" to tapes

Note on the index screen

You cannot record the index screen.

Image data modified with personal computers or shot with other equipment
You may not be able to copy them with your camcorder.

If you press DISPLAY in standby or recording mode

You can see memory playback and the file name indicators in addition to the indicators pertinent to tapes, such as the time code indicator. However, when you set the DISPLAY switch located on the front of the viewfinder to OFF, these indicators will not be displayed.

When the auto logo insert function is activated

You cannot use this function. Refer to the extra operating instructions, "Auto Logo Insert for Copyright Protection."

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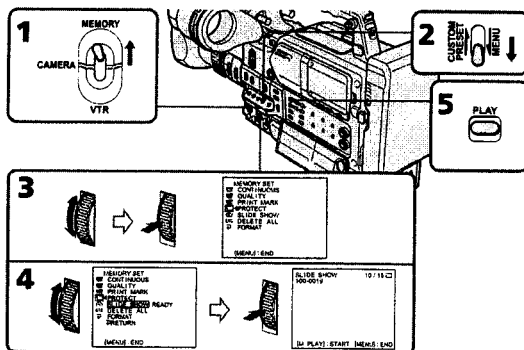
Playing back images continuously – SLIDE SHOW

You can automatically play back images in sequence. This function is useful especially when checking recorded images or during a presentation.

Before operation

Insert a "Memory Stick" into your camcorder.

- (1) Set the MEMORY/CAMERA/VTR selector to MEMORY.
- (2) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu.
- (3) Turn the SEL/PUSH EXEC dial to select , then press the dial.
- (4) Turn the SEL/PUSH EXEC dial to select SLIDE SHOW, then press the dial.
- (5) Press MEMORY PLAY. Your camcorder plays back the images recorded on the "Memory Stick" in sequence.



To stop or end the slide show

Push the CUSTOM PRESET/MENU switch in the MENU direction and release it.

To pause during a slide show

Press MEMORY PLAY.

To start the slide show from a particular image

Select the desired image using MEMORY +/- buttons before step 2.

To view the recorded images on a monitor

Connect your camcorder to a monitor with the A/V connecting cable before operation.

If you change the "Memory Stick" during operation

Be sure to follow the steps again from the beginning.

When the auto logo insert function is activated

You cannot use this function. Refer to the extra operating instructions, "Auto Logo Insert for Copyright Protection."

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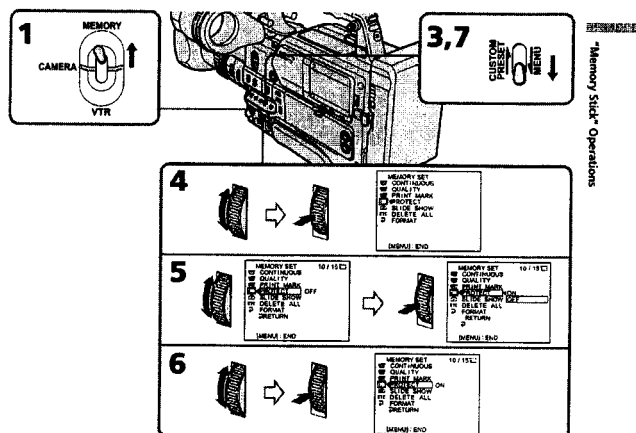
Preventing accidental erasure – Image protection

To prevent accidental erasure of important images, you can protect selected images.

Before operation

Insert a "Memory Stick" into your camcorder.

- (1) Set the MEMORY/CAMERA/VTR selector to MEMORY or VTR.
- (2) Play back the image you want to protect (p. 142).
- (3) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu.
- (4) Turn the SEL/PUSH EXEC dial to select , then press the dial.
- (5) Turn the SEL/PUSH EXEC dial to select PROTECT, then press the dial.
- (6) Turn the SEL/PUSH EXEC dial to select ON, then press the dial.
- (7) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to erase the menu display. The "o" mark is displayed beside the data file name of the protected image.



To cancel image protection

Select OFF in step 6, then press the SEL/PUSH EXEC dial.

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Preventing accidental erasure – Image protection

Note

Formatting erases all information on the "Memory Stick," including the protected image data. Check the contents of the "Memory Stick" before formatting.

If the write-protect tab on the "Memory Stick" is set to LOCK

You cannot carry out image protection.

When the auto logo insert function is activated

You cannot use this function. Refer to the extra operating instructions, "Auto Logo Insert for Copyright Protection."

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Deleting images

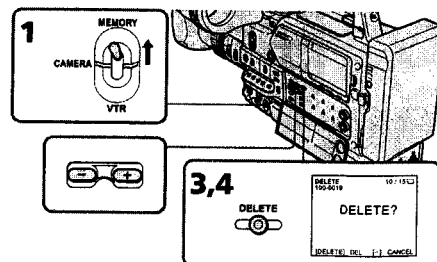
You can delete images stored in a "Memory Stick."

Deleting selected images

Before operation

Insert a "Memory Stick" into your camcorder.

- (1) Set the MEMORY/CAMERA/VTR selector to MEMORY or VTR.
- (2) Play back the image you want to delete (p. 142).
- (3) Press MEMORY DELETE. "DELETE?" appears on the LCD screen or in the viewfinder.
- (4) Press MEMORY DELETE again. The selected image is deleted.



To cancel deleting an image

Press MEMORY – in step 4.

To delete an image displayed on the index screen

Press MEMORY +/- to move the ► indicator to the desired image and follow steps 3 and 4.

Notes

- To delete a protected image, first cancel image protection.
- Once you delete an image, you cannot restore it. Check the images to be deleted carefully before deleting them.

While "DELETING" appears

Do not change the position of the MEMORY/CAMERA/VTR selector or press any buttons.

If the write-protect tab on the "Memory Stick" is set to LOCK

You cannot delete any image.

When the auto logo insert function is activated

You cannot use this function. Refer to the extra operating instructions, "Auto Logo Insert for Copyright Protection."

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Deleting images

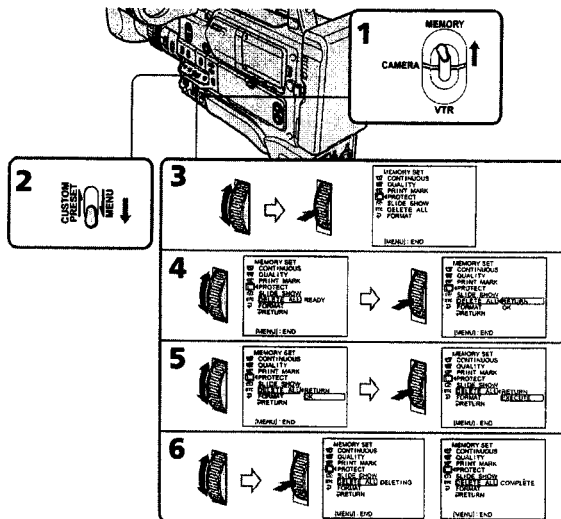
Deleting all the images

You can delete all the unprotected images in a "Memory Stick."

Before operation

Insert a "Memory Stick" into your camcorder.

- (1) Set the MEMORY/CAMERA/VTR selector to MEMORY.
- (2) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu.
- (3) Turn the SEL/PUSH EXEC dial to select , then press the dial.
- (4) Turn the SEL/PUSH EXEC dial to select DELETE ALL, then press the dial.
- (5) Turn the SEL/PUSH EXEC dial to select OK, then press the dial. "OK" changes to "EXECUTE."
- (6) Press the SEL/PUSH EXEC dial. "DELETING" appears on the LCD screen or in the viewfinder. When all the unprotected images are deleted, "COMPLETE" is displayed.



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Deleting images

To cancel deleting all the images in the "Memory Stick"

Select RETURN in step 5, then press the SEL/PUSH EXEC dial.

Memory Stick Operations

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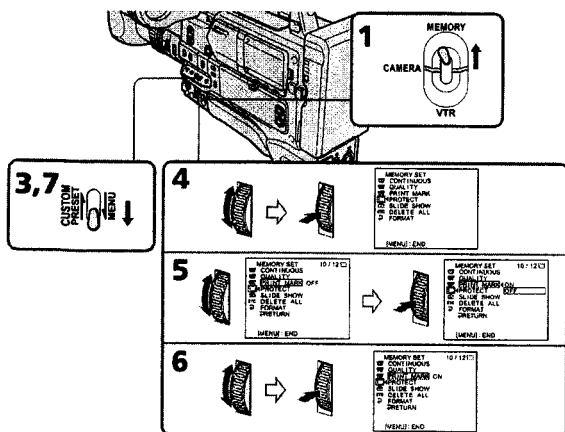
Writing a print mark – Print mark

You can specify the recorded still image to be printed out. This function is useful for printing out still images later. Your camcorder conforms with the DPOF (Digital Print Order Format) standard for specifying the still images to print out.

Before operation

Insert a "Memory Stick" into your camcorder.

- (1) Set the MEMORY/CAMERA/VTR selector to MEMORY or VTR.
- (2) Play back the image to be printed out (p. 142).
- (3) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu.
- (4) Turn the SEL/PUSH EXEC dial to select , then press the dial.
- (5) Turn the SEL/PUSH EXEC dial to select PRINT MARK, then press the dial.
- (6) Turn the SEL/PUSH EXEC dial to select ON, then press the dial.
- (7) Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to erase the menu display. The "P" mark is displayed beside the data file name of an image with a print mark.



To cancel writing print marks

Select OFF in step 6, then press the SEL/PUSH EXEC dial.

Writing a print mark – Print mark

If the write-protect tab on the "Memory Stick" is set to LOCK. You cannot write print marks on still images.

When the auto logo insert function is activated

You cannot use this function. Refer to the extra operating instructions, "Auto Logo Insert for Copyright Protection."

Memory Stick Operations

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Compatibility of DVCAM and DV formats

DVCAM format is developed as a more reliable and higher end format than consumer DV format. Here explained are the differences, compatibility, and limitations on editing about DVCAM and DV formats.

Differences between DVCAM and DV formats

Item	DVCAM	DV
Track pitch	15 µm	10 µm
Audio sampling frequency	12 bit: 32 kHz 16 bit: 48 kHz	12 bit: 32 kHz 16 bit: 32 kHz, 44.1 kHz, 48 kHz
Audio recording mode ¹⁾	Lock mode	Unlock mode

¹⁾ There are two modes for audio recording, lock mode and unlock mode. In lock mode, the sampling frequencies of audio and video are synchronized. In unlock mode, which consumer DV format adopts, the two sampling frequencies are independent. Therefore, lock mode is more effective than unlock mode in digital processing and smooth transition during audio editing.

DVCAM and DV cassettes

The recording format of picture is defined according to recorder's format as described below.

Recorder's format	Cassette's format	Recording format
DVCAM	DVCAM	DVCAM
	DV	DVCAM
DV	DVCAM	DV
	DV	DV

This digital camcorder complies with DVCAM format. Though DV cassettes can be used for recording, we recommend you to use DVCAM cassettes to get the most out of high reliability of DVCAM format. The recording time of DV cassettes is 2/3 shorter than that indicated on the DV cassettes.

Compatibility on playback

Some tapes cannot be played back on DVCAM or DV video equipment.

Tape	On DV video equipment	On DVCAM video equipment
DV-formatted	Can be played back	Can be played back (only when recorded in SP mode)
DVCAM-formatted	Some equipment may be able to play back	Can be played back

Compatibility of DVCAM and DV formats

Compatibility on editing using DV connectors

When this digital camcorder is connected to other DVCAM or DV video equipment using DV connectors, the recording format of edited tapes is defined according to recorder's format as described below.

Source tape	Player's format	Recorder's format	Recording format
DVCAM-formatted ²⁾	DVCAM	DVCAM	DVCAM
DVCAM-formatted	DVCAM	DV	DV ⁴⁾
DVCAM-formatted ²⁾	DV ³⁾	DVCAM	DVCAM ²⁾
DVCAM-formatted	DV ³⁾	DV	DV ⁴⁾
DV-formatted ⁴⁾	DVCAM	DVCAM	DVCAM ¹⁾
DV-formatted ⁴⁾	DVCAM	DV	DV
DV-formatted	DV	DVCAM	DVCAM ¹⁾
DV-formatted	DV	DV	DV

¹⁾ When using the DVCAM video equipment to carry out DV dubbing of a tape recorded in DV format, the tape produced will be in DVCAM format as follows:
– Audio recording mode will be unlock mode.

– The time code format will be partly maladjusted. (There will be no effect on the recorded picture except in certain case.)

²⁾ If the tape is to be dubbed is DVCAM formatted tape as in 1), the tape produced will be in DVCAM format as follows:

– Audio recording mode will be unlock mode.

– The time code format will be partly maladjusted.

³⁾ Depending on signal conditions of the source tape, you may not be able to edit the tape using the DV connectors.

⁴⁾ Audio recording mode of the edited tape is lock mode.

⁵⁾ Some DV video equipment may be able to play back a DVCAM-formatted tape. Even if the tape is played back, contents of the playback cannot be guaranteed.

⁶⁾ DV-formatted tapes recorded in SP mode only can be used as source tapes.

⁷⁾ Depending on model of video equipment, you may not be able to edit.

Limitations on editing

You will find the following limitations when editing.

• Due to the difference of a track pitch, you cannot record or edit on DV-formatted tapes using DVCAM video equipment.

• Depending on signal conditions, you may not be able to record or edit on DVCAM-formatted tapes.

In these cases, do the following:

• Edit using audio/video jacks.

• Dub a DV-formatted tape using audio/video jacks, then use the dubbed tape as a source tape.

Usable cassettes

Selecting cassette types

You can use the **DVCAM** DVCAM cassette*, **mini DVCAM** mini DVCAM cassette*, **DV** DV cassette*, and **mini DV** mini DV cassette* in this camcorder. You cannot use any other **8 mm**, **Hi8**, **Hi8** Digital 8, **VHS**, **S-VHS**, **VHS** S-VHS, **VHS** VHSC, **S-VHS** S-VHSC, **B** Betamax or **ED** Betamax cassette.

* There are two types of DVCAM/DV cassettes: with cassette memory and without cassette memory. Tapes with cassette memory have **CM** (Cassette Memory) mark. Sony recommends that you use a tape with **CM** mark to enjoy your camcorder fully.

The IC memory is built in the cassette with cassette memory. Using this IC memory, your camcorder can read, write, and search data such as the date of recording or titles. The functions using the cassette memory require successive signals recorded on the tape. If the tape has a blank portion in the beginning or between the recorded portions, a title may not be displayed properly or the search functions may not work correctly. Not to make any blank portion on the tape, press **END SEARCH** to return to the end of the recorded portion before you begin the next recording when:

– You have ejected the cassette while recording.

– You have played back the tape in VTR mode.

If there is a blank portion or discontinuous signal on your tape, re-record from the beginning to the end of the tape concerning above.

When you record, using a digital video camera recorder without a cassette memory function, on a tape recorded by one with the cassette memory function, the same result may occur.

CM16K mark on the cassette

The memory capacity of tapes marked with **CM16K** is 16Kb. Your camcorder can accommodate up to 16Kb.

The number of data recordable on cassette memory (when using 16 Kb/2 048 bytes cassette memory)

Data	Numbers
INDEX	135 (15 bytes/1 data)
TITLE	106
DATE	24 (10 bytes/1 data)
PHOTO	48 (10 bytes/1 data)
CASSETTE LABEL	1

The numbers above is as a guide.

Usable cassettes

Copyright signal

When you play back

When you connect your camcorder to any other video camera recorder to dub a tape that has recorded copyright control signals for copyright protection, you may not record the tape that played back on your camcorder.

When you record

You cannot record software on your camcorder that contains copyright control signals for copyright protection of software.

"COPY INHIBIT" appears on the LCD screen, in the viewfinder or on the TV screen if you try to record such software.

Your camcorder does not record copyright control signals on the tape when it records.

Audio mode

Fs32K (12-bit) mode: The original sound can be recorded in channels 1 and 2, and the new sound in channels 3 and 4 in 32 kHz. The balance between channels 1/2 and channels 3/4 can be adjusted by selecting **AUDIO MIX** in the menu settings during playback and audio dubbing. Both sounds can be played back. You can monitor the sound during audio dubbing.

Fs48K (16-bit) mode: A new sound cannot be recorded but the original sound can be recorded in high quality using two channels. The audio mode can be indicated on the LCD screen or in the viewfinder.

You may not add a sound on a DVCAM-formatted tape which does not comply with the condition of the DVCAM format as described on page 156 or when you recorded on a DV-formatted tape. In this case, "NS" appears on the LCD screen or in the viewfinder.

Usable cassettes

Notes on the DVCAM/DV cassette

When affixing a label on the DVCAM/DV cassette

Be sure to affix a label only on the locations as illustrated below [a] so as not to cause malfunction of your camcorder.

After using the DVCAM/DV cassette

Rewind the tape to the beginning, put the cassette in its case, and store it in an upright position.

If the cassette memory function does not work

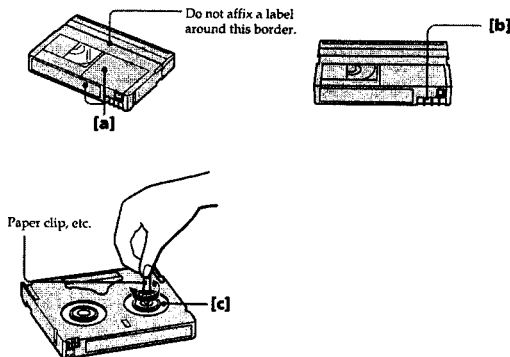
Reinsert a cassette a few times. The gold-plated connector of DVCAM/DV cassettes may be dirty or dusty.

Cleaning the connector

If the gold-plated connector of DVCAM/DV cassettes is dirty or dusty, you may not operate the function using cassette memory. Clean up the gold-plated connector with cotton-wool swab, about every 10 times ejection of a cassette. [b]

Checking the tape for slack

Turn the reel [c] gently in the direction shown by the arrow. If the reel does not move, there is no slack. (Do not turn the reel hard.) Insert the cassette into the cassette holder, close the cassette holder, and after about 10 seconds take it out.



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About i.LINK

Your camcorder is equipped with the DV input/output connector based on i.LINK (IEEE1394) standard.

This section explains the specifications and features of i.LINK.

What is i.LINK?

i.LINK is a digital serial interface designed to integrate the devices equipped with i.LINK connector. By connecting i.LINK devices, i.LINK allows your device to:

- Transmit and receive data such as digital audio and digital video signals in two ways
- Control other i.LINK devices
- Easily connect with another device using just an i.LINK cable.

Your i.LINK device is capable of connecting AV devices and perform various operations and data transfer. Further availability for connections with versatile equipment and operations will be planned in the future.

Other advantages include the following feature. When connecting multiple i.LINK devices, your device cannot only perform operations and data transfer with the directly connected device but also perform them with any of the devices that are connected via other devices. Therefore, you will not need to concern the order of connecting devices. However, depending on the features and specifications of the connected devices, you may need to operate certain functions differently or may not be able to perform certain operations or data transfer.

Note

Your camcorder can be connected to one device with the i.LINK cable (DV cable). When you connect with a device that has two or more i.LINK connectors, refer to the operating instructions supplied with the connected device.

Tips

- i.LINK, a nickname for IEEE 1394 that Sony proposed, is a trademark supported by a majority of companies worldwide.
- IEEE 1394 is an international standard defined by IEEE, The Institute of Electrical and Electronics Engineers, Inc.

About data transfer speed of i.LINK

i.LINK defines a maximum data transfer speed of approximately 100, 200 and 400 Mbps* that are described as S100, S200 and S400 respectively.

For i.LINK devices, a maximum data transfer speed that the device supports is identified on "specifications" page of the operating instructions supplied with the device or near its i.LINK connector.

With a device that does not identify the data transfer speed, the maximum data transfer speed that the device supports is S100.

When connecting with the device that support different data transfer speed, the actual data transfer speed may be different from those described on the i.LINK connectors.

*What is Mbps?

Mega bits per second. A measure of the rate at which data is transmitted per second. In case of 100 Mbps, 100 Mega bits of data can be transmitted per second.

i.LINK operation with your camcorder

For details on dubbing your camcorder to your VCR equipped with DV input/output connector, see pages 86, 98.

Your camcorder is available for use with other devices equipped with Sony i.LINK (DV) connector. For details on connection with i.LINK cable and necessary software, refer to the operating instructions supplied with the connected device.

Use Sony i.LINK cables

Use Sony i.LINK cables to connect the i.LINK devices.

6 pins ↔ 6 pins (For dubbing)

6 pins ↔ 4 pins (For dubbing)

i.LINK and i are trademarks.

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Additional Information

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Troubleshooting

If you run into any problem using your camcorder, use the following table to troubleshoot the problem. If the problem persists, disconnect the power source and contact your Sony dealer or local authorized Sony service facility. If "C:□□□□" appears on the LCD screen or in the viewfinder, the self-diagnosis display function has worked. See page 168.

In the recording mode

Symptom	Cause and/or Corrective Actions
START/STOP does not operate.	• The MEMORY/CAMERA/VTR selector is not set to CAMERA. → Set it to CAMERA. (p. 15) • The tape has run out. → Rewind the tape or insert a new one. (p. 13, 33) • The REC/SAVE switch on the cassette is set to SAVE. → Use a new tape or set the switch to REC. (p. 14) • The auto logo insert function is activated. → Refer to the operating instructions ("Auto Logo Insert for Copyright Protection") supplied with this camcorder. • The tape is stuck to the drum (moisture condensation). → Remove the cassette and leave your camcorder for at least one hour to acclimatize. (p. 172)
The power goes off.	• The battery pack is dead or nearly dead. → Install a charged battery pack. (p. 9)
The image on the viewfinder screen is not clear.	• The viewfinder lens is not adjusted. → Adjust the viewfinder lens. (p. 20)
The SteadyShot function does not work.	• STEADYSHOT is set to OFF in the menu settings. → Set it to ON. (p. 120)
The autofocus function does not work.	• The camcorder is in manual focus mode. → Turn to auto focus mode. (p. 45) • Shooting conditions are not suitable for autofocus. → Adjust focus manually. (p. 45)
The fader function does not work.	• The digital effect function is working. → Cancel it. (p. 69)
A vertical band appears when you shoot a subject such as lights or a candle flame against a dark background.	• The contrast between the subject and background is too high. This is not a malfunction.
Vertical streaks appear when you shoot a very bright subject.	• This is called the smear phenomenon. This is not a malfunction.

Troubleshooting

Symptom	Cause and/or Corrective Actions
Some tiny white spots appear on the LCD screen or in the viewfinder.	• When the shutter speed is too low.
The click of the shutter does not sound.	• BEEP is set to OFF in the menu settings. → Set it to MELODY or NORMAL. (p. 120)
The image is not bright even if you use the video light.	• The manual adjustment is not suitable for the situations. → Set the AUTO MODE switch to ON, or cancel the manual adjustment. (p. 36)
Audio recording is not possible.	• The AUDIO LEVEL (CH-1/CH-2) knobs are set to the minimum level. → Adjust the setting of the AUDIO LEVEL (CH-1/CH-2) knobs. (p. 54) • The AUDIO LEVEL knob on the front is set to the minimum level. → Adjust the setting of the AUDIO LEVEL knob. (p. 54)

In the playback mode

Symptom	Cause and/or Corrective Actions
The tape does not move when a video control button is pressed.	• The MEMORY/CAMERA/VTR selector is not set to VTR. → Set it to VTR. (p. 30)
The playback button does not function.	• The tape has run out. → Rewind the tape. (p. 33)
There are horizontal lines on the picture or the playback picture is not clear or does not appear.	• The video head may be dirty. → Clean the heads using the Sony DVM12CL cleaning cassette (not supplied). (p. 173)
No sound or only a low sound is heard when playing back a tape.	• The volume is turned to minimum. → Turn up the volume. (p. 30) • AUDIO MIX is set to the CH3/4 side in the menu settings. → Adjust AUDIO MIX. (p. 120)
The title search function does not work.	• The tape has no cassette memory. → Use a tape with cassette memory. (p. 79, 158) • CM SEARCH is set to OFF in the menu settings. → Set it to ON. (p. 120) • There is no title in the tape. → Superimpose the titles. (p. 110) • The tape has a blank portion in the recorded portion. (p. 79)
Displaying the recorded date, date search function does not work.	• The tape has no cassette memory. → Use a tape with cassette memory. (p. 80, 158) • CM SEARCH is set to OFF in the menu settings. → Set it to ON. (p. 120) • The tape has a blank portion in the recorded portion. (p. 81)

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Additional Information

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Troubleshooting

Symptom	Cause and/or Corrective Actions
The new sound now being added, or that has been added to the recorded tape is not heard.	- AUDIO MIX is set to the CH1/2 side in the menu settings. - Set it to the side you want to monitor. (p. 120)
The title is not displayed.	- TITLE DSPL is set to OFF in the menu settings. - Set it to ON. (p. 120)
The sound is muted or images do not appear when monitoring images through a monitor.	Pull out the A/V connecting cable from the AUDIO IN/OUT CH-1/CH-2 and VIDEO IN/OUT jacks, then connect it again.
The recorded sound is distorted.	- The audio level is too high. - Adjust the setting of the AUDIO LEVEL (CH-1/CH-2) knobs, and record again. (p. 54)

In the recording and playback modes

Symptom	Cause and/or Corrective Actions
The power does not turn on.	- The battery pack is not installed, or is dead or nearly dead. - Install a charged battery pack. (p. 9) - The AC power adaptor is not connected, or it is not turned on. - Connect the AC power adaptor. (p. 11)
The camcorder does not work even if the MEMORY/CAMERA/VTR selector is set to CAMERA or VTR.	- The battery pack is not installed, or is dead or nearly dead. - Install a charged battery pack. (p. 9) - The AC power adaptor is not connected, or it is not turned on. - Connect the AC power adaptor. (p. 11) - The POWER switch is set to OFF. - Set it to ON. (p. 15, 30)
The end search function does not work.	- The tape was ejected after recording when using a tape without cassette memory. (p. 29, 33) - You have not recorded on the new cassette yet. (p. 29, 33)
The end search function does not work correctly.	The tape has a blank portion in the beginning or middle. (p. 29)
The battery pack is quickly discharged.	- The operating temperature is too low. - The battery pack is not fully charged. - Charge the battery pack fully. - The battery pack is completely dead, and cannot be recharged. - Replace with a new battery pack. (p. 9) - The setup of the REMAIN item in the menu settings is not proper to the installed battery pack. - Set it properly according to the installed battery pack.

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Troubleshooting

Symptom	Cause and/or Corrective Actions
You cannot write a print mark on the still image.	- The write-protect tab on the "Memory Stick" is set to LOCK. - Set the tab to write. (p. 129) - The image that you will write a print mark is not being played back. - Press MEMORY PLAY to play back the image. (p. 142)
The photo save function does not work.	- The write-protect tab on the "Memory Stick" is set to LOCK. - Set the tab to write. (p. 129) - The battery pack is dead. - Install a charged battery pack or use the AC power adaptor instead of the battery pack. (p. 9, 11)

Others

Symptom	Cause and/or Corrective Actions
The title is not recorded.	- The cassette has no cassette memory. - Use a cassette with cassette memory. (p. 110, 158) - The cassette memory is full. - Erase some data. (p. 118) - The REC/SAVE switch on the cassette is set to SAVE. - Set the switch to REC. (p. 14) - Nothing is recorded in that position on the tape. - Superimpose the title to the recorded position. (p. 111)
The cassette label is not recorded.	- The cassette has no cassette memory. - Use a cassette with cassette memory. (p. 116, 158) - The cassette memory is full. - Erase some data. (p. 118) - The REC/SAVE switch on the cassette is set to SAVE. - Set the switch to REC. (p. 14)
While editing using the DV connecting cable (i.LINK cable), recording picture cannot be monitored.	Disconnect the DV connecting cable (i.LINK cable), and connect it again. (p. 86)
Digital program editing does not function.	- The input selector on the VCR is not set correctly. - Check the connection and set up the selector position. (p. 85) - Setting program on a blank portion of the tape is attempted. - Set the program again on a recorded portion. (p. 92) - Your camcorder and the VCR are not synchronized. - Synchronize them. (p. 89) - The camcorder and VCR are not connected with a DV connecting cable (i.LINK cable). - Connect the camcorder and VCR with a DV connecting cable (i.LINK cable). - The VCR is not turned on. - Turn on the VCR.

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Troubleshooting

Symptom	Cause and/or Corrective Actions
The cassette cannot be removed from the holder.	- The power source is disconnected. - Connect it firmly. (p. 9, 11) - The battery is dead. - Use a charged battery pack. (p. 9)
The [] and [] indicators flash and no functions except for cassette ejection work.	- Moisture condensation has occurred. - Remove the cassette and leave your camcorder for at least one hour to acclimatize. (p. 172)
[] indicator does not appear when using a tape with cassette memory.	- The gold-plated connector of the cassette is dirty or dusty. - Clean the gold-plated connector. (p. 160)
Remaining tape indicator is not displayed.	- The REMAIN is set to AUTO in the menu settings. - Set it to ON to always display the remaining tape indicator. (p. 120)

When operating using the "Memory Stick"

Symptom	Cause and/or Corrective Actions
Operations do not function.	- The MEMORY/CAMERA/VTR selector is set to CAMERA. - Set it to MEMORY or VTR. - The "Memory Stick" is not inserted. - Insert a "Memory Stick." (p. 131) - The auto logo insert function is activated. - Refer to the extra operating instructions ("Auto Logo Insert for Copyright Protection").
Recording does not function.	- The "Memory Stick" has already been recorded to its full capacity. - Erase unnecessary images and record again. (p. 134, 151) - The "Memory Stick" formatted incorrectly is inserted. - Format the "Memory Stick" or use another "Memory Stick." (p. 124) - The write-protect tab on the "Memory Stick" is set to LOCK. - Set the tab to write. (p. 129)
The image cannot be deleted.	- The image is protected. - Cancel image protection. (p. 149) - The write-protect tab on the "Memory Stick" is set to LOCK. - Set the tab to write. (p. 129)
You cannot format the "Memory Stick."	- The write-protect tab on the "Memory Stick" is set to LOCK. - Set the tab to write. (p. 129)
Deleting all the images cannot be carried out.	- The write-protect tab on the "Memory Stick" is set to LOCK. - Set the tab to write. (p. 129)
You cannot protect the image.	- The write-protect tab on the "Memory Stick" is set to LOCK. - Set the tab to write. (p. 129) - The image to be protected is not being played back. - Press MEMORY PLAY to play back the image. (p. 142)

Additional Information

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Troubleshooting

Symptom	Cause and/or Corrective Actions
The Remote Commander supplied with your camcorder does not work.	- COMMANDER is set to OFF in the menu settings. - Set it to ON. (p. 120) - Something is blocking the infrared rays. - Remove the obstacle. - The batteries are inserted in the battery holder with the + - polarities incorrectly. - Insert the batteries with the correct polarity. (p. 189) - The batteries are dead. - Insert new ones. (p. 189)
The input picture does not appear on the LCD screen or in the viewfinder when your camcorder is connected to outputs on the TV or VCR.	- DISPLAY is set to V-OUT/LCD in the menu settings. - Set it to LCD. (p. 120)
The melody or beep sounds for five seconds.	- Moisture condensation has occurred. - Remove the cassette and leave your camcorder for at least one hour to acclimatize. (p. 172) - Some troubles have occurred in your camcorder. - Remove the cassette and insert it again, then operate your camcorder.
No function works though the power is on.	Disconnect the mains lead of the AC power adaptor or remove the battery pack, then reconnect it after about one minute. Turn the power on. If the functions still do not work, press the RESET button located below the DISPLAY SELECT switch using a sharp-pointed object. (If you press the RESET button, all the settings including the date and time return to the default.) (p. 11, 180)

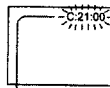
Additional Information

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Self-diagnosis display

Your camcorder has a self-diagnosis display function. This function displays the current condition of your camcorder as a 5-digit code (a combination of a letter and figures) on the LCD screen or in the viewfinder. If a 5-digit code is displayed, check the following code chart. The last two digits (indicated by □□) will differ depending on the state of your camcorder.

On the LCD screen or in the viewfinder



Self-diagnosis display

• C□□□□
You can service your camcorder yourself.
• E□□□□
Contact your Sony dealer or nearest local authorized Sony service facility.

Five-digit display	Cause and/or Corrective Actions
C:21:□□	- Moisture condensation has occurred. - Remove the cassette and leave your camcorder for at least one hour to acclimatize. (p. 172)
C:22:□□	- The video heads are dirty. - Clean the heads using the Sony DVM12CL cleaning cassette (not supplied). (p. 173)
C:31:□□ C:32:□□	- A malfunction other than the above. - Remove the cassette and insert it again, then operate your camcorder. - Disconnect the mains lead of the AC power adaptor or remove the battery pack. After reconnecting the power source, operate your camcorder.
E:61:□□ E:62:□□	- A malfunction that you cannot service has occurred. - Contact your Sony dealer and inform them of the 5-digit code. (example: E:61:10)

If you are unable to rectify the problem even if you try corrective actions a few times, contact your Sony dealer or nearest local authorized Sony service facility.

Warning indicators and messages

If indicators and messages appear on the LCD screen or in the viewfinder, check the following:
See the page in parentheses "()" for more information.

Warning indicators

⊞ The battery is dead or nearly dead

Slow flashing:

- The battery is nearly dead.
- Depending on conditions, the ⊞ indicator may flash, even if there are five to 10 minutes remaining.

Fast flashing:

- The battery is dead (p. 10).
- The battery is completely dead.

⊞ Warning Indicator as to tape

Slow flashing:

- The tape is near the end.
- No tape is inserted (p. 13).*
- The REC/SAVE switch on the cassette is set to REC (p. 14).*

Fast flashing:

- The tape has run out (p. 33).*

⊞ You need to eject the cassette

Slow flashing:

- The REC/SAVE switch on the cassette is set to REC (p. 14).*

Fast flashing:

- Moisture condensation has occurred (p. 172).*
- The tape has run out (p. 33).*
- The self-diagnosis display function is activated (p. 168).*

⊞ Moisture condensation has occurred*

Fast flashing:

- Eject the cassette, turn off your camcorder, and leave it for about one hour with the cassette compartment open (p. 172).

⊞ Warning indicator as to cassette memory

Slow flashing:

- No tape with cassette memory is inserted (p. 158).*

Self-diagnosis display (p. 168)

⊞ The still image is protected

Slow flashing:

- The still image is protected (p. 149).*

⊞ Warning indicator as to "Memory Stick"*

Slow flashing:

- No "Memory Stick" is inserted (p. 131).

Fast flashing:

- Unreadable "Memory Stick" is inserted (p. 131).

Additional Information

Warning indicators and messages

100-0001 "(Warning indicators) Memory Stick" file error*

Slow flashing:

- File is broken.
- File has no compatibility.

⊞ "Memory Stick" format error*

Fast flashing:

- There are two directories or more.
- Data is broken.
- "Memory Stick" is not formatted correctly (p. 124).

Warning messages

- CLOCK SET** Reset the date and time (p. 128).
- MEMORY FULL** The "Memory Stick" is full in photo save function (p. 141).
- CLEANING CASSETTE** The video heads are dirty (p. 173).*
- ⊞ FULL** The tape cassette memory is full (p. 112).*
- 48K** AUDIO MODE is set to 48K.* You cannot dub new sound (p. 125).
- REC MODE** REC MODE is set to DV SP.* You cannot dub new sound (p. 125).
- TAPE** There is no recorded portion on the tape.* You cannot dub new sound (p. 103).
- i.LINK CABLE** i.LINK cable is connected (p. 101).* You cannot dub new sound.
- ⊞ FULL** The "Memory Stick" is full (p. 136).*
- ⊞** The write-protect tab on the "Memory Stick" is set to LOCK (p. 129).*
- ⊞ NO FILE** No still image is recorded on the "Memory Stick" (p. 142).*
- ⊞ NO MEMORY STICK** No "Memory Stick" is inserted (p. 131).*
- ⊞ MEMORY STICK ERROR** The "Memory Stick" data is corrupted (p. 131).*
- ⊞ FORMAT ERROR** (p. 124)*
- ⊞ DIRECTORY ERROR** (p. 143)*
- COPY INHIBIT** The tape contains copyright control signals for copyright protection of software (p. 159).*
- ⊞ TAPE END** The tape has reached the end of the tape (p. 33).*
- ⊞ NO TAPE** Insert a cassette tape (p. 13).*
- ⊞ LOGO NOT INSERTED** The logo is not inserted properly, or the "Memory Stick" is not inserted that has the logo data. Check if the "Memory Stick" is inserted properly, or insert the "Memory Stick" with logo data.
- ⊞ LOGO SYSTEM ERROR** The data setting of the logo insert system is corrupted. Consult your Sony dealer or local authorized Sony service facility.

* You hear the melody or beep sound.

** ⊞ and the message appear alternately.

Using your camcorder abroad

Using your camcorder abroad

You can use your camcorder in any country or area with the optional AC power adaptor within 100 V to 240 V AC, 50/60 Hz.

Your camcorder is a PAL system-based camcorder. If you want to view the playback picture on a TV, it must be a PAL system-based TV equipped with audio/video input jacks.

Check the following list.

PAL system

Australia, Austria, Belgium, China, Czech Republic, Denmark, Finland, Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system

Brazil

PAL-N system

Argentina, Paraguay, Uruguay

NTSC system

Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

SECAM system

Bulgaria, France, Guyana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Ukraine, etc.

Additional Information

Simple setting of clock by time difference

You can easily set the clock to the local time by setting a time difference. Select WORLD TIME in the menu settings. See page 120 for more information.

Maintenance information and precautions

Moisture condensation

If your camcorder is brought directly from a cold place to a warm place, moisture may condense inside your camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or your camcorder may not operate correctly. If there is moisture inside your camcorder, the beep sounds and the  indicator flashes. When the  indicator flashes at the same time, the cassette is inserted in your camcorder. If moisture condenses on the lens, the indicator will not appear.

If moisture condensation occurred

None of the functions except cassette ejection will work. Eject the cassette, turn off your camcorder, and leave it for about one hour with the cassette compartment open. Your camcorder can be used again if the  indicator does not appear when the power is turned on again.

Note on moisture condensation

Moisture may condense when you bring your camcorder from a cold place into a warm place (or vice versa) or when you use your camcorder in a hot place as follows:

- You bring your camcorder from a ski slope into a place warmed up by a heating device.
- You bring your camcorder from an air-conditioned car or room into a hot place outside.
- You use your camcorder after a squall or a shower.
- You use your camcorder in a high temperature and humidity place.

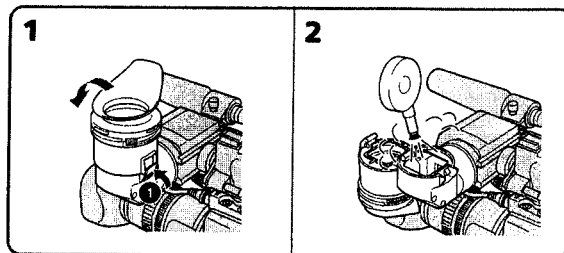
How to prevent moisture condensation

When you bring your camcorder from a cold place into a warm place, put your camcorder in a plastic bag and tightly seal it. Remove the bag when the air temperature inside the plastic bag has reached the surrounding temperature (after about one hour).

Maintenance information and precautions

Removing Dust from Inside the Viewfinder

- (1) While holding down the Eyepiece release catch , hinge up the eyecup.
- (2) Clean the surface with a commercially available blower.



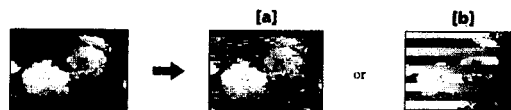
Maintenance information

Cleaning the video head

To ensure normal recording and clear pictures, clean the video heads. The video head may be dirty when:

- mosaic-pattern noise appears on the playback picture.
- playback pictures do not move.
- playback pictures do not appear.
- the  indicator and "CLEANING CASSETTE" message appear one after another on the LCD screen or in the viewfinder.

If the above problem, [a] or [b] occurs, clean the video heads for 10 seconds with the Sony DVM12CL cleaning cassette (not supplied). Check the picture and if the above problem persists, repeat cleaning.



Cleaning the LCD screen

If fingerprints or dust make the LCD screen dirty, we recommend using a LCD Cleaning Cloth (not supplied) to clean the LCD screen.

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Maintenance information and precautions

Charging the vanadium-lithium battery in your camcorder

Your camcorder is supplied with a vanadium-lithium battery installed so as to retain the date and time, etc., regardless of the setting of the POWER switch. The vanadium-lithium battery is always charged as long as you are using your camcorder. The battery, however, will get discharged gradually if you do not use your camcorder. It will be completely discharged in about four months if you do not use your camcorder at all. Even if the vanadium-lithium battery is not charged, it will not affect the camcorder operation. To retain the date and time, etc., charge the battery if the battery is discharged.

Charging the vanadium-lithium battery:

- Connect your camcorder to mains using the AC power adaptor (not supplied), and leave your camcorder with the POWER switch set to OFF for more than 24 hours.
- Or install the fully charged battery pack in your camcorder, and leave your camcorder with the POWER switch set to OFF for more than one hour.

Precautions

Camcorder operation

- Operate your camcorder on 12 V to 17 V DC.
- For DC or AC operation, use the accessories recommended in this operating instructions.
- If any solid object or liquid get inside the casing, unplug your camcorder and have it checked by a Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF when you are not using your camcorder.
- Do not wrap your camcorder with a towel, for example, and operate it. Doing so might cause heat to build up inside.
- Keep your camcorder away from strong magnetic fields or mechanical vibration. Noise may appear on the image.
- Do not touch the LCD screen with a sharp-pointed object.
- If your camcorder is used in a cold place, a residual image may appear on the LCD screen. This is not a malfunction.
- While using your camcorder, the back of the LCD screen may heat up. This is not a malfunction.

On handling tapes

- Do not insert anything into the small holes on the rear of the cassette. These holes are used to sense the type and thickness of the tape and if the recording tab is in or out.
- Do not open the tape protect cover or touch the tape.
- Avoid touching or damaging the terminals. To remove dust, clean the terminals with a soft cloth.

Camcorder care

- Remove the tape, and periodically turn on the power, operate the CAMERA and VTR sections and play back a tape for about three minutes when your camcorder is not to be used for a long time.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on the lens, remove them with a soft cloth.
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.

Maintenance information and precautions

- Do not let sand get into your camcorder. When you use your camcorder on a sandy beach or in a dusty place, protect it from the sand or dust. Sand or dust may cause your camcorder to malfunction, and sometimes this malfunction cannot be repaired.

Notes on dry batteries

To avoid possible damage from battery leakage or corrosion, observe the following:

- Be sure to insert the batteries with the + - polarities matched to the + - marks.
- Dry batteries are not rechargeable.
- Do not use a combination of new and old batteries.
- Do not use different types of batteries.
- Current flows from batteries when you are not using them for a long time.
- Do not use leaking batteries.

If batteries are leaking

- Wipe off the liquid in the battery compartment carefully before replacing the batteries.
- If you touch the liquid, wash it off with water.
- If the liquid get into your eyes, wash your eyes with a lot of water and then consult a doctor.

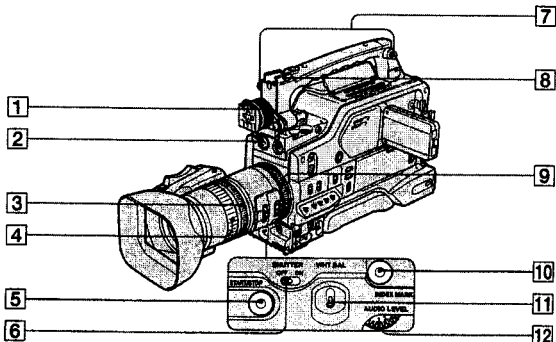
If any problem occurs, unplug your camcorder and contact your nearest Sony dealer.

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Identifying the parts and controls

Camcorder



- | | |
|--------------------------------|------------------------------|
| 1 VF connector (p. 187) | 7 Shoulder strap fitting |
| 2 MIC IN +48V connector (p. 7) | 8 Accessory shoe |
| 3 Zoom ring (p. 25) | 9 IRIS ring (p. 37) |
| 4 Focus ring (p. 45) | 10 INDEX MARK button (p. 53) |
| 5 START/STOP button (p. 15) | 11 WHT BAL switch (p. 47) |
| 6 SHUTTER switch (p. 40) | 12 AUDIO LEVEL knob (p. 54) |



This mark indicates that this product is a genuine accessory for Sony video products. When purchasing Sony video products, Sony recommends that you purchase accessories with this "GENUINE VIDEO ACCESSORIES" mark.



Mini DV

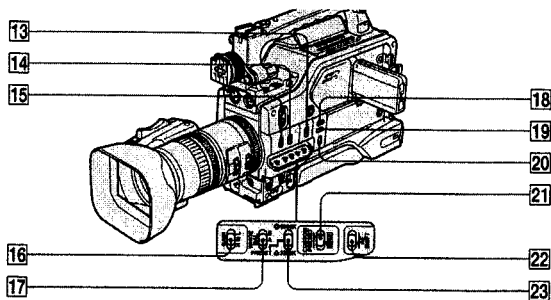
Digital Video Cassette

III Cassette Memory

These are trademarks.

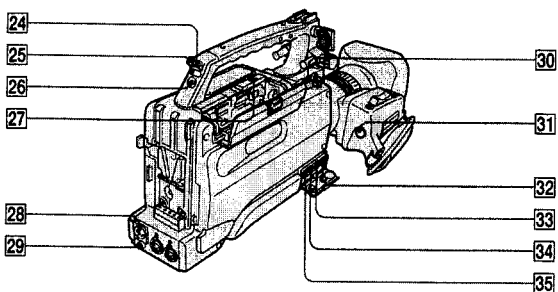
Quick Reference

Identifying the parts and controls



- | | |
|-----------------------------|---------------------------------------|
| 13 AUTO MODE switch (p. 36) | 18 DISPLAY button (p. 31) |
| 14 ATW switch (p. 47) | 19 AUDIO LEVEL button (p. 54) |
| 15 AGC switch (p. 38) | 20 ZEBRA selector (p. 42) |
| 16 GAIN selector (p. 38) | 21 CUSTOM PRESET/MENU switch (p. 120) |
| 17 WHITE BAL switch (p. 47) | 22 AE SHIFT switch (p. 44) |
| | 23 WHT PRESET switch (p. 48) |

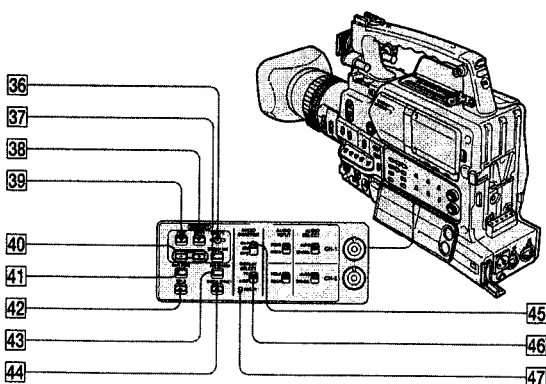
Identifying the parts and controls



- | | |
|---------------------------------|--|
| 24 Remote sensor | 30 LIGHT connector (p. 60) |
| 25 TALLY lamp (p. 16) | 31 START/STOP button (p. 15) |
| 26 TALLY switch (p. 16) | 32 S VIDEO (ID-2) jack (p. 35, 63, 85, 96, 138) |
| 27 EJECT button (p. 13) | 33 VIDEO (ID-2) IN/OUT jack (p. 35, 63, 85, 96, 138) |
| 28 DC IN 12V connector (p. 11) | 34 AUDIO IN/OUT CH-1 jack (p. 35, 85, 96, 102) |
| 29 DC OUT 12V connector (p. 58) | 35 AUDIO IN/OUT CH-2 jack (p. 35, 85, 96, 102) |

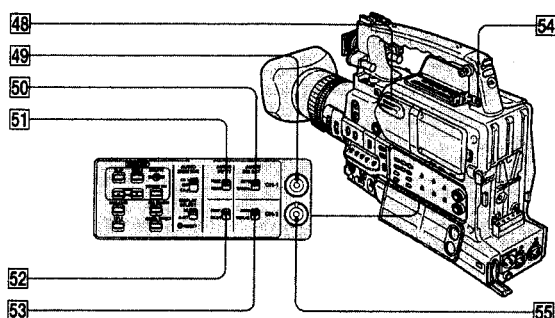
Quick Reference

Identifying the parts and controls



- | | |
|------------------------------------|-----------------------------------|
| 36 MEMORY DELETE button (p. 151) | 45 AUDIO MONITOR selector (p. 31) |
| 37 MEMORY MIX button (p. 71) | 46 DISPLAY SELECT switch (p. 109) |
| 38 MEMORY INDEX button (p. 144) | 47 RESET button (p. 167) |
| 39 MEMORY PLAY button (p. 142) | |
| 40 MEMORY +/- buttons (p. 71, 142) | |
| 41 DATA CODE button (p. 31) | |
| 42 TITLE button (p. 110) | |
| 43 END SEARCH button (p. 29) | |
| 44 DIGITAL EFFECT button (p. 69) | |

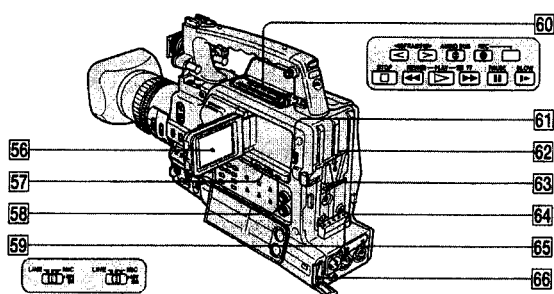
Identifying the parts and controls



- 48 Speaker
- 49 AUDIO LEVEL (CH-1) knob (p. 54)
- 50 AUDIO SELECT (CH-1) switch (p. 7)
- 51 AUDIO INPUT (CH-1) switch (p. 7)
- 52 AUDIO INPUT (CH-2) switch (p. 7)
- 53 AUDIO SELECT (CH-2) switch (p. 7)
- 54 PHONES jack (p. 31)
- 55 AUDIO LEVEL (CH-2) knob (p. 54)

Quick Reference

Identifying the parts and controls

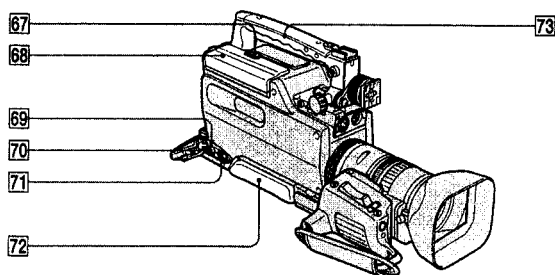


- 56 LCD screen (p. 22)
- 57 LCD BRIGHT +/- buttons (p. 23)
- 58 LCD switch (p. 22)
- 59 LINE/MIC (CH1/CH2) selectors (p. 58)
- 60 Video control buttons (p. 30, 33, 96)
- 61 OPEN button (p. 22)
- 62 Battery attachment interface
- 63 BREAKER button
- 64 AUDIO IN CH1 connector (p. 58, 102)
- 65 AUDIO IN CH2 connector (p. 58, 102)
- 66 "Memory Stick" slot (p. 131)

On BREAKER (breaker reset) button
If an excessive current flows in the internal circuits, the internal circuit breaker shuts off the power supply. Push this button after eliminating the cause of the excessive current.

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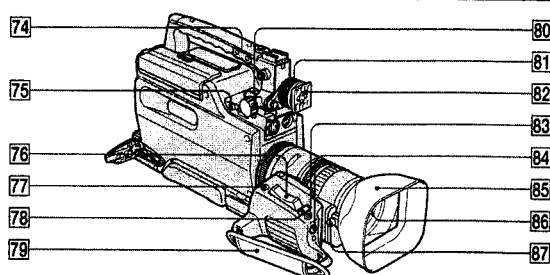
Identifying the parts and controls



- 67 OPEN button (p. 13)
- 68 Cassette lid (p. 13)
- 69 LANC jack
- 70 VIDEO OUT connector (p. 35)
- 71 i DV IN/OUT connector (p. 86, 98, 139)
This "i.LINK" mark is a trademark of Sony Corporation and indicates that this product is in agreement with IEEE 1394-1995 specifications and their revisions.
The i DV IN/OUT connector is i.LINK compatible.
- 72 Shoulder pad
- 73 Carrying handle

Quick Reference

Identifying the parts and controls

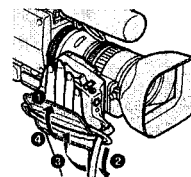


- 74 Fixing screws for optional microphone holder (p. 56)
- 75 MIC LOW CUT switch (p. 7)
- 76 Power zoom lever (p. 24)
- 77 PHOTO button (p. 62, 134)
- 78 IRIS switch (p. 37)
- 79 Grip strap
- 80 Viewfinder front-to-back position locking knob (p. 19)
- 81 Viewfinder left-to-right positioning ring (p. 19)
- 82 Viewfinder fitting shoe (p. 187)
- 83 IRIS PUSH AUTO button (p. 38)
- 84 Remote sensor
- 85 Lens hood
You can attach a wide teleconversion lens (not supplied) by removing the lens hood.
- 86 Lens
- 87 Lens hood fixing screw

Removing the lens hood
To remove the lens hood for attachment of the wide teleconversion lens, etc., loosen the lens hood fixing screw, and unscrew the lens hood counterclockwise.

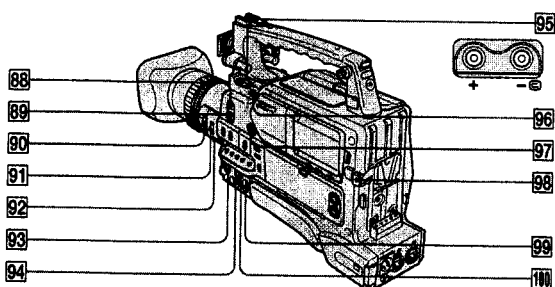
When using additional filters
We recommend that you use the Sony made filters having the genuine accessory mark.

Fastening the grip strap
Fasten the grip strap firmly.



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Identifying the parts and controls

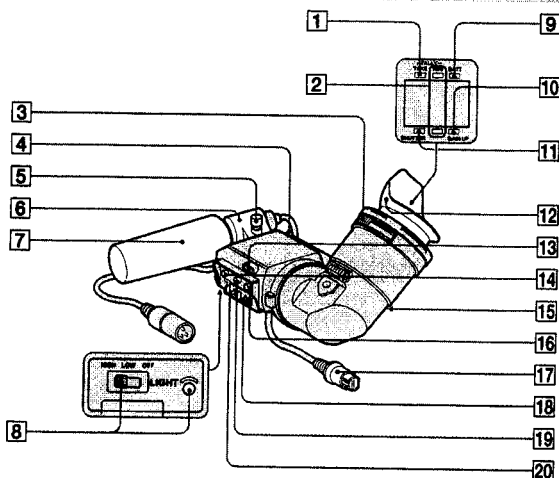


- | | |
|-----------------------------------|---------------------------------------|
| 88 SPOT LIGHT button (p. 28) | 95 EDIT/SEARCH buttons (p. 29) |
| 89 BACK LIGHT button (p. 27) | 96 LIGHT switch (p. 60) |
| 90 ND FILTER selector (p. 17) | 97 MONITOR knob (p. 30) |
| 91 FOCUS selector (p. 45) | 98 Battery release button (p. 9) |
| 92 FOCUS PUSH AUTO button (p. 45) | 99 MEMORY/CAMERA/VTR selector (p. 15) |
| 93 FADER button (p. 67) | 100 SEL/PUSH EXEC dial (p. 120) |
| 94 POWER switch (p. 15) | |

Quick Reference

Identifying the parts and controls

Viewfinder



- | | |
|---|------------------------------------|
| 1 TAKE/TALLY lamp
This lamp is not used with the camcorder. | 10 GAIN UP lamp (p. 39) |
| 2 REC/TALLY lamps (p. 15)
The below REC lamp is not used with the camcorder. | 11 SHUTTER lamp (p. 40) |
| 3 Eyepiece focusing knob (p. 20) | 12 Eye cup |
| 4 Stopper (p. 187) | 13 Tally lamp |
| 5 Microphone holding screw | 14 PEAKING control (p. 19) |
| 6 Microphone holder | 15 Eyepiece release catch (p. 173) |
| 7 Microphone | 16 BRIGHT control (p. 19) |
| 8 LIGHT switch and light | 17 Viewfinder connector |
| 9 BATT lamp (p. 10) | 18 TALLY switch (p. 16) |
| | 19 CONTRAST control (p. 19) |
| | 20 DISPLAY switch (p. 31) |

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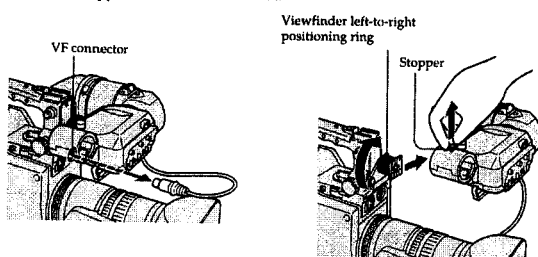
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Identifying the parts and controls

Removing the viewfinder

Remove any microphone from the viewfinder before beginning.

- (1) Pull the viewfinder connector out of the VF connector on the front.
- (2) Loosen the viewfinder left-to-right positioning ring, then pulling up the stopper, slide the viewfinder out.



To fit the viewfinder

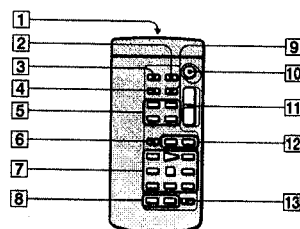
Reverse the removal procedure. (You need not hold the viewfinder stopper up.)

Quick Reference

Identifying the parts and controls

Remote Commander

The buttons that have the same name on the Remote Commander as on your camcorder function identically to the buttons on your camcorder.



- | | |
|--|--|
| 1 Transmitter
Point toward the remote sensor to control your camcorder after turning on your camcorder. | 9 DATA CODE button (p. 32) |
| 2 ZERO SET MEMORY button
This button does not function. | 10 START/STOP button (p. 15) |
| 3 PHOTO button (p. 62, 134) | 11 Power zoom button (p. 24) |
| 4 DISPLAY button (p. 31) | 12 << / >> buttons (p. 77, 79, 80, 82) |
| 5 Memory control buttons (p. 71, 142) | 13 AUDIO DUB button (p. 103) |
| 6 SEARCH MODE button
(p. 77, 79, 80, 82) | |
| 7 Video control buttons (p. 33) | |
| 8 REC button (p. 96)/MARK button
(p. 91) | |

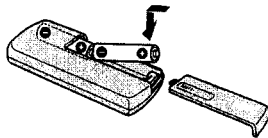
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Identifying the parts and controls

To prepare the Remote Commander

Insert two R6 (size AA) batteries by matching the + and - polarities on the batteries to the + - marks inside the battery compartment.



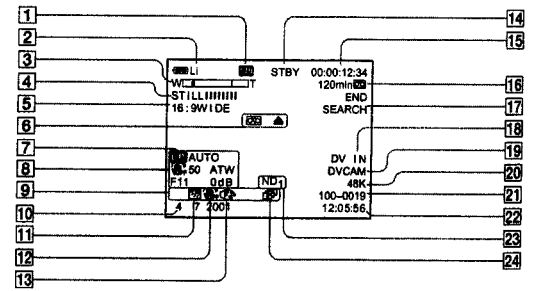
Notes on the Remote Commander

- Point the remote sensor away from strong light sources such as direct sunlight or overhead lighting. Otherwise, the Remote Commander may not function properly.
- Your camcorder works in the commander mode VTR 2. Commander modes 1, 2 and 3 are used to distinguish your camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR in the commander mode VTR 2, we recommend changing the commander mode or covering the sensor of the VCR with black paper.

Quick Reference

Identifying the parts and controls

Operation Indicators



- 1 Cassette memory indicator (p. 26)
- 2 Remaining battery capacity indicator (p. 26)
- 3 Zoom indicator (p. 24)/Data file name indicator (p. 129)
- 4 Digital effect indicator (p. 69)/FADER indicator (p. 67)/MEMORY MIX indicator (p. 71)
- 5 16:9WIDE indicator (p. 66)/PROG. SCAN indicator (p. 64)
- 6 Warning indicators (p. 169)
- 7 Custom preset indicator (p. 50)
- 8 Data code indicator (p. 32)/AE SHIFT indicator (p. 44)/GAIN indicator (p. 38)/IRIS indicator (p. 37)/SteadyShot OFF indicator (p. 32)/White balance mode indicator (p. 47)/Shutter speed indicator (p. 40)
- 9 LCD bright indicator (p. 23)/Volume indicator (p. 30)
- 10 Date indicator (p. 32)
- 11 Backlight indicator (p. 27)/Spot light indicator (p. 28)
- 12 SteadyShot OFF indicator (p. 43)
- 13 Manual focus/Infinity indicator (p. 45)
- 14 Standby/Recording indicator (p. 26)/Video control mode indicator (p. 33)/Image quality mode indicator (p. 132)
- 15 Time code indicator (p. 26)/Self-diagnosis indicator (p. 168)/Photo mode indicator (p. 62)/Image number indicator (p. 143)/User bits (p. 108)
- 16 Remaining tape indicator (p. 26)/Memory playback indicator (p. 143)
- 17 END SEARCH indicator (p. 29)/FRAME REC indicator (p. 76)/Interval recording indicator (p. 74)
- 18 DV IN indicator (p. 99)/AV→DV OUT indicator
- 19 DVCAM format indicator/DV format SP mode indicator (p. 26)
- 20 Audio mode indicator (p. 125)
- 21 Data file name indicator
This indicator appears when the MEMORY MIX functions work.
- 22 Audio input level/Time Indicator (p. 26)
- 23 ND filter indicator (p. 17)
- 24 Continuous mode indicator (p. 135)

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Quick Function Guide

Functions to adjust exposure (in the recording mode)

- Adjusting lights amount for shooting ND filter (p. 17)
- Shooting backlit subjects BACK LIGHT (p. 27)
- In spotlight, such as at the theater or a formal event Spotlight mode (p. 28)

Functions to give images more impact (in the recording mode)

- Smooth transition between scenes FADER (p. 67)
- Taking a still picture PHOTO (p. 62, 134)
- Digital processing of images DIGITAL EFFECT (p. 69)
- Superimposing a title TITLE (p. 110)

Functions to give a natural appearance to your recordings (in the recording mode)

- Preventing deterioration of picture quality in digital zoom D ZOOM [MENU] (p. 120)
- Focusing manually Manual focus (p. 45)

Functions to be used in editing (in the recording mode)

- Adding new sounds on the recorded tape Audio dubbing (p. 100)
- Watching the picture on a wide-screen TV Wide mode (p. 66)
- Viewing images using a personal computer "Memory Stick" (p. 129)
- Progressive mode (p. 64)

Functions to be used after recording (in the playback mode)

- Digital processing of recorded images DIGITAL EFFECT (p. 84)
- Displaying the date/time or various settings when you recorded Data code (p. 32)
- Searching for scenes having a title Title search (p. 79)
- Searching for scenes recorded in the photo mode Photo search (p. 82)
- Scanning scenes recorded in the photo mode Photo scan (p. 83)

You can insert the selected logo or mark on the moving picture being shot. For details, refer to the operating instructions ("Auto Logo Insert for Copyright Protection") supplied with this camcorder.

Quick Reference

SONY

3-062-061-12 (1)

DSR-PD150/PD150P/250/250P Auto Logo Insert for Copyright Protection

Operating Instructions	GB
Mode d'emploi	FR
Bedienungsanleitung	DE
Istruzioni per l'uso	IT

DSR-PD150/PD150P
DSR-250/250P

©2000 Sony Corporation

2

Introduction - Auto Logo Insert

The auto logo insert function is designed for copyright protection. Using this function, a registered still image is always inserted on a moving picture to assure copyright protection.

Once you set the auto logo insert function to active:

- You can insert a still image recorded in a "Memory Stick" onto a moving picture.
 - You cannot shoot if you remove the "Memory Stick" that the registered logo file is stored in.
 - You need your password to deactivate this function.
- You can secure a copyright of a picture shot by your camcorder on the functions above.

Before using this function

Do not forget your password!

If you forget your password, the memory of the camcorder must be formatted. There is a charge for it even if your camcorder is still under guarantee.

Do not remove the battery pack, the AC power adaptor, or the "Memory Stick" while registering the logo!
Otherwise, the "Memory Stick," image data, or setting information on the LOGO INS item may be damaged, and moreover, this will cause serious damage of the camcorder.

The following functions do not work when the auto logo insert function is active:

- Progressive mode
- Memory mix
- All the functions in memory mode
- Even though you set the POWER switch to MEMORY, the camcorder works in CAMERA mode (DSR-PD150/PD150P)
- Even though you set the MEMORY/CAMERA/VTR selector to MEMORY, the camcorder works in CAMERA mode (DSR-250/250P)
- All the functions that are used with the "Memory Stick" in VCR mode (DSR-PD150/PD150P) or in VTR mode (DSR-250/250P)

The DSR-PD150/PD150P is the model used for illustration purposes. Any differences in operation are clearly indicated in the text, for example, "DSR-PD150/PD150P only."

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Preparing a logo file

To insert a logo file on a moving picture, there are two ways: one uses the luminancekey setting and the other uses the chroma setting.

Preparation 1: Creating a logo file

Create a logo file at 640 x 480 dots (VGA size).

Luminancekey (LUMINANCE)

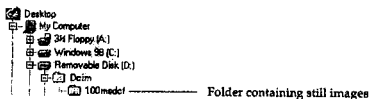
Makes a brighter portion of a still image transparent, then records a moving picture on that portion. When you use luminancekey to insert a logo file, the background (transparent portion) of the logo file must be created in white, and the ratio setting of the RGB signal must be as follows: R=255, G=255, and B=255. If an image has a brighter portion other than the background, that portion may be transparent.

Chroma (CHROMA)

Makes a blue portion of a still image transparent, then records a moving picture on that portion. When you use chroma to insert a logo file, the background (transparent portion) of the logo file must be created in blue, and the ratio setting of an RGB signal must be as follows: R=0, G=0, and B=255. If an image has a blue portion other than the background, that portion may be made transparent.

Preparation 2: Saving a logo file in the "Memory Stick" format

Convert a logo file format to the "Memory Stick" format, and save it in the 100msdcf folder, using the supplied application, PictureGear.



Notes

- The portion of a still image that is displayed on the LCD screen or in the viewfinder is 90 % of the original image. So, the portion near the edges may not be displayed.
- The resolution of a still image that is created using the chromakey setting is about 360 x 480 dots.

Usable file formats for a logo file

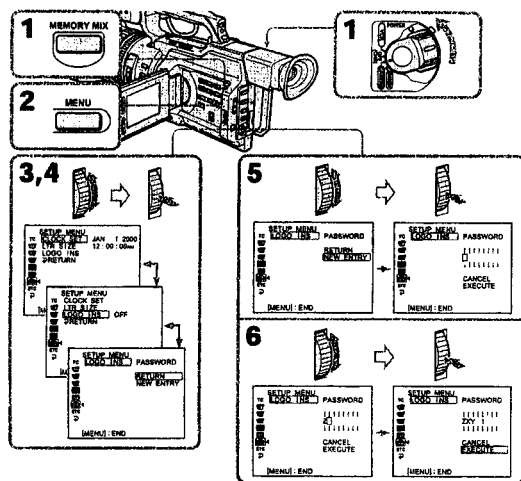
You can only use JPEG format files of 640 x 480 dots (VGA size) that correspond to the "Memory Stick" format. However, you can use the following file format images by converting them to "Memory Stick" format files using the supplied application, PictureGear: TIFF, BITMAP, GIF, PNG, and DVF.

Registering your password

You have to register your password (maximum eight digits) before using the auto logo insert function. Once you set your password, you need to enter your password to access LOGO INS in the menu setting, and to set, change, or deactivate the setting.

- (1) **DSR-PD150/PD150P:** While holding down MEMORY MIX, set the POWER switch from OFF (CHG) to CAMERA. Keep pressing MEMORY MIX for about five seconds.
DSR-250/250P: Set the MEMORY/CAMERA/VTR selector to MEMORY and while holding down MEMORY MIX, set the POWER switch to ON. Keep pressing MEMORY MIX for about five seconds.
- (2) **DSR-PD150/PD150P:** Press MENU to display the menu.
DSR-250/250P: Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu.
- (3) Turn the SEL/PUSH EXEC dial to select then press the dial.
- (4) Turn the SEL/PUSH EXEC dial to select LOGO INS, then press the dial.
- (5) Turn the SEL/PUSH EXEC dial to select NEW ENTRY, then press the dial.
- (6) Turn the SEL/PUSH EXEC dial to select the desired character, then press the dial.
The character you select is entered, and the cursor moves to the next column.
- (7) Repeat step 6 to enter characters into other columns.
- (8) Turn the SEL/PUSH EXEC dial to select EXECUTE, then press the dial.

Registering your password



To cancel the setting of the password

Select CANCEL in step 8, then press the SEL/PUSH EXEC dial.

Do not forget your password

If you forget your password, you cannot change the LOGO INS setting. In this case, the memory of the camcorder must be formatted. Formatting must be done by qualified personnel only and there is a charge for it even if your camcorder is still under guarantee. For details consult your Sony dealer or local authorized Sony service facility.

On password characters

Do not select an easy password. A password must be difficult to unscramble.

When accessing the LOGO INS item

You cannot do any recording.

On characters you can use as your password

- Each time you turn the SEL/PUSH EXEC dial, the character changes as follows:
(blank) ↔ A ↔ B ↔ ... ↔ Z ↔ (blank) ↔ 0 ↔ 1 ↔ ... ↔ 9 ↔ (blank) ↔ ...
- You cannot set all eight columns to blank. If you do, "ALL BLANK" appears on the LCD screen or in the viewfinder.

Registering a still image to be used as a logo

Select a still image from a "Memory Stick."

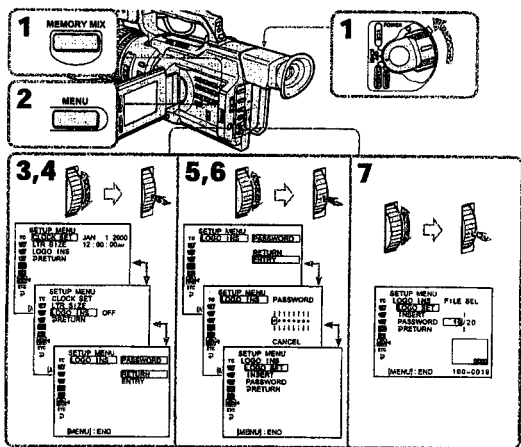
Selecting a still image

Before operating

Insert the "Memory Stick" on which the desired still image is recorded, into your camcorder.

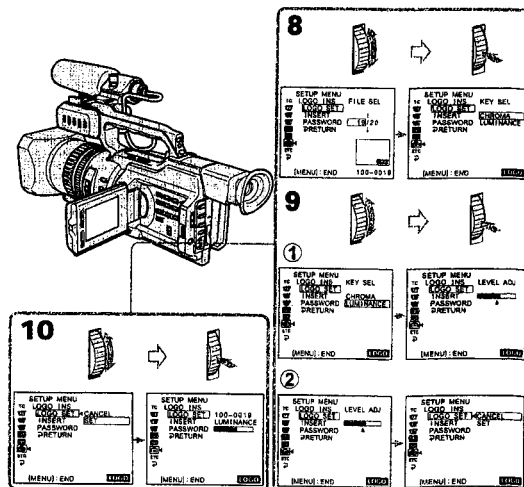
- DSR-PD150/PD150P:** While holding down MEMORY MIX, set the POWER switch from OFF (CHG) to CAMERA. Keep pressing MEMORY MIX for about five seconds.
- DSR-250/250P:** Set the MEMORY/CAMERA/VTR selector to MEMORY and while holding down MEMORY MIX, set the POWER switch to ON. Keep pressing MEMORY MIX for about five seconds.
- DSR-PD150/PD150P:** Press MENU to display the menu.
- DSR-250/250P:** Push the CUSTOM PRESET/MENU switch in the MENU direction and release it to display the menu.
- Turn the SEL/PUSH EXEC dial to select LOGO INS, then press the dial.
- Turn the SEL/PUSH EXEC dial to select ENTRY, then press the dial.
- Enter your password. Turn the SEL/PUSH EXEC dial to select EXECUTE, then press the dial.
- Turn the SEL/PUSH EXEC dial to select LOGO SET, then press the dial.

Registering a still image to be used as a logo



Registering a still image to be used as a logo

- Turn the SEL/PUSH EXEC dial to select the desired image, then press the dial.
The selected image is displayed on the LCD screen or in the viewfinder at full size.
- Set up CHROMA or LUMINANCE. Select CHROMA when the background of the image is blue, and select LUMINANCE when the background is white.
 - Turn the SEL/PUSH EXEC dial to select CHROMA or LUMINANCE, then press the dial.
 - Turn the SEL/PUSH EXEC dial to set up LEVEL ADJ, then press the dial.
- Turn the SEL/PUSH EXEC dial to select SET, then press the dial.
The data file name of the image, the level of CHROMA/LUMINANCE, and the indication of CHROMA or LUMINANCE are displayed on the LCD screen or in the viewfinder.



Registering a still image to be used as a logo

To cancel registering the logo

Select CANCEL in step 10, then press the SEL/PUSH EXEC dial.

Once you register the logo

INSERT is automatically set to ON in the menu settings, and the logo will be inserted.

Notes

- Do not remove the battery pack, the AC power adaptor, or the "Memory Stick" while registering the logo data. Otherwise, the "Memory Stick" or image data in it may be damaged, and moreover, this will cause serious damage of the camcorder.
- The setting of the auto logo insert function will be kept until you set LOGO INS to OFF in the menu settings.
- When INSERT is set to ON, you cannot do any recording if the "Memory Stick" in which the registered logo is recorded is not inserted, and the following mode and functions will not be active:
 - Progressive mode
 - Memory mix
 - All the functions in memory mode
 - All the functions that are used with the "Memory Stick" in VCR mode (DSR-PD150/PD150P) or in VTR mode (DSR-250/250P).
- Even though you set the POWER switch to MEMORY, the camcorder works in CAMERA mode (DSR-PD150/PD150P).
- Even though you set the MEMORY/CAMERA/VTR selector to MEMORY, the camcorder works in CAMERA mode (DSR-250/250P).

If you enter an incorrect password

"INCORRECT PASSWORD" will be displayed.

When the selected image cannot be displayed

"FILE OPEN ERROR" will be displayed.

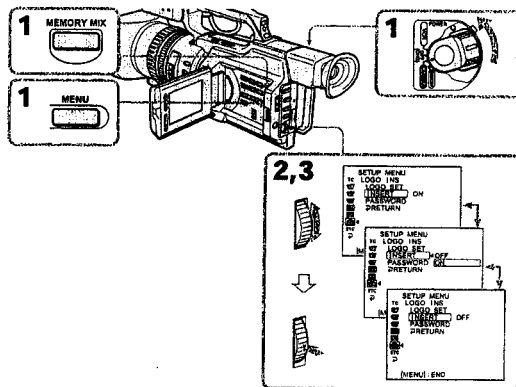
Depending on the background color of the image

Choose "CHROMA" when the background color is blue, or "LUMINANCE" when the background color is white.

Deactivating the auto logo insert function

Once you set LOGO INS to ON in the menu settings, information on the LOGO INS setup will be retained until you set it to OFF.

- (1) Follow steps 1 to 6 on page 6.
- (2) Turn the SEL/PUSH EXEC dial to select INSERT, then press the dial.
- (3) Turn the SEL/PUSH EXEC dial to select OFF, then press the dial.



To insert the logo

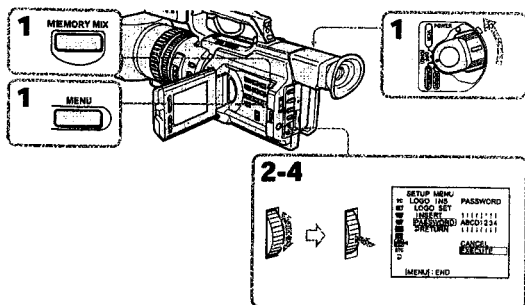
Select ON in step 3, then press the SEL/PUSH EXEC dial.

9 10

Changing or resetting the setup

Changing your password

- (1) Follow steps 1 to 6 on page 6.
- (2) Turn the SEL/PUSH EXEC dial to select PASSWORD, then press the dial.
- (3) Turn the SEL/PUSH EXEC dial to select CHANGE, then press the dial.
- (4) Enter the new password, and turn the SEL/PUSH EXEC dial to select EXECUTE, then press the dial.



To cancel changing your password

Select CANCEL in step 4, then press the SEL/PUSH EXEC dial.

Note

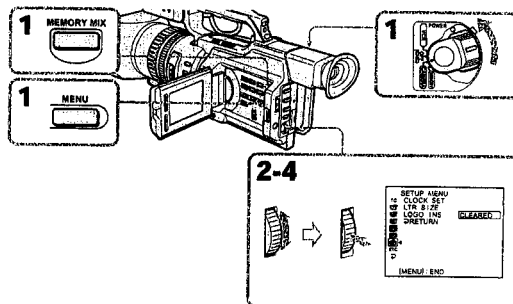
If you enter "CLEARALL" in step 4, the entire setup will be cleared (p. 12).

Changing or resetting the setup

Resetting the entire setup for the auto logo insert function

This procedure resets the entire setup for LOGO INS.

- (1) Follow steps 1 to 6 on page 6.
- (2) Turn the SEL/PUSH EXEC dial to select PASSWORD, then press the dial.
- (3) Turn the SEL/PUSH EXEC dial to select CHANGE, then press the dial.
- (4) Enter "CLEARALL," and turn the SEL/PUSH EXEC dial to select EXECUTE, then press the dial. "CLEARED" is indicated on the screen, and the entire setup will be reset.



To cancel resetting

Select CANCEL in step 3, then press the SEL/PUSH EXEC dial.

11 12

Precautions concerning the auto logo insert function

Follow the precautions below.

- Do not forget your password. If you forget your password, the memory of the camcorder must be formatted. There is a charge for it even if your camcorder is still under guarantee.
- Do not remove the battery pack, the AC power adaptor, or the "Memory Stick" while registering the logo. Otherwise, the "Memory Stick" image data, or setting information on the LOGO INS item may be damaged, and moreover, this will cause serious damage of the camcorder.
- Do not break or lose the "Memory Stick" that the registered logo is recorded. We recommend that you make a backup copy and save it to another "Memory Stick" or to your PC.
- We recommend that you set the write-protect tab on the "Memory Stick" to LOCK.

On the warning messages

When the following messages appear on the LCD screen or in the viewfinder, their probable causes and remedies are as follows:

❌ LOGO NOT INSERTED

The logo is not inserted properly, or the "Memory Stick" is not inserted that has the logo data.

- Check if the "Memory Stick" is inserted properly, or insert the "Memory Stick" with logo data.

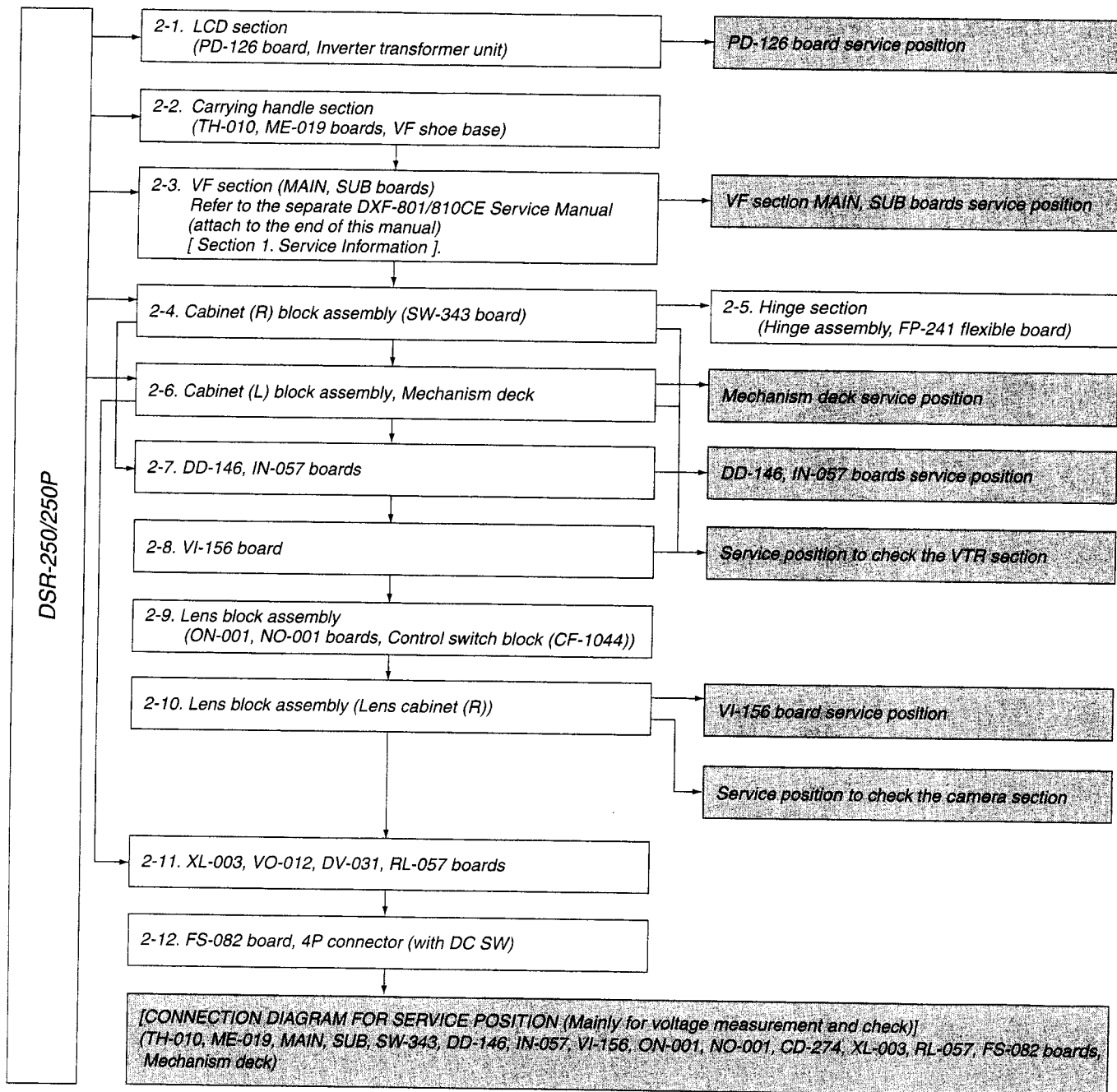
❌ LOGO SYSTEM ERROR

The data setting of the logo insert system is corrupted.

- Consult your Sony dealer or local authorized Sony service facility.

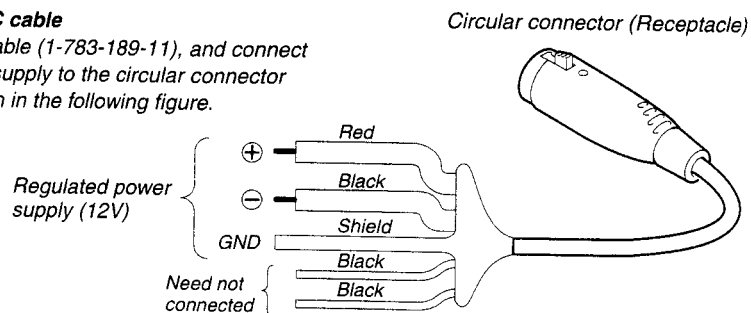
SECTION 2 DISASSEMBLY

The following flow chart shows the disassembly procedure.



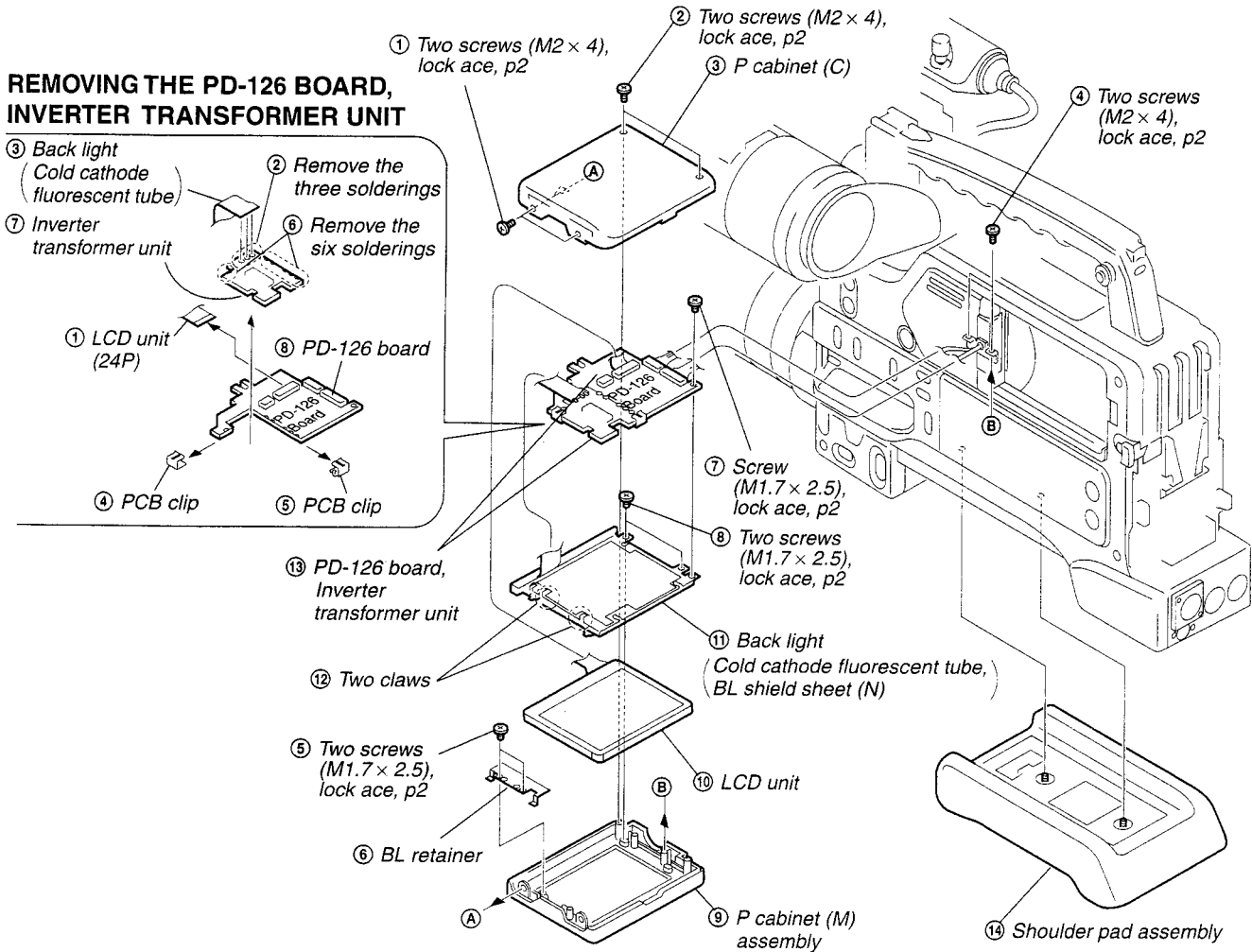
How to make the DC cable

Cut the connecting cable (1-783-189-11), and connect the regulated power supply to the circular connector (receptacle) as shown in the following figure.

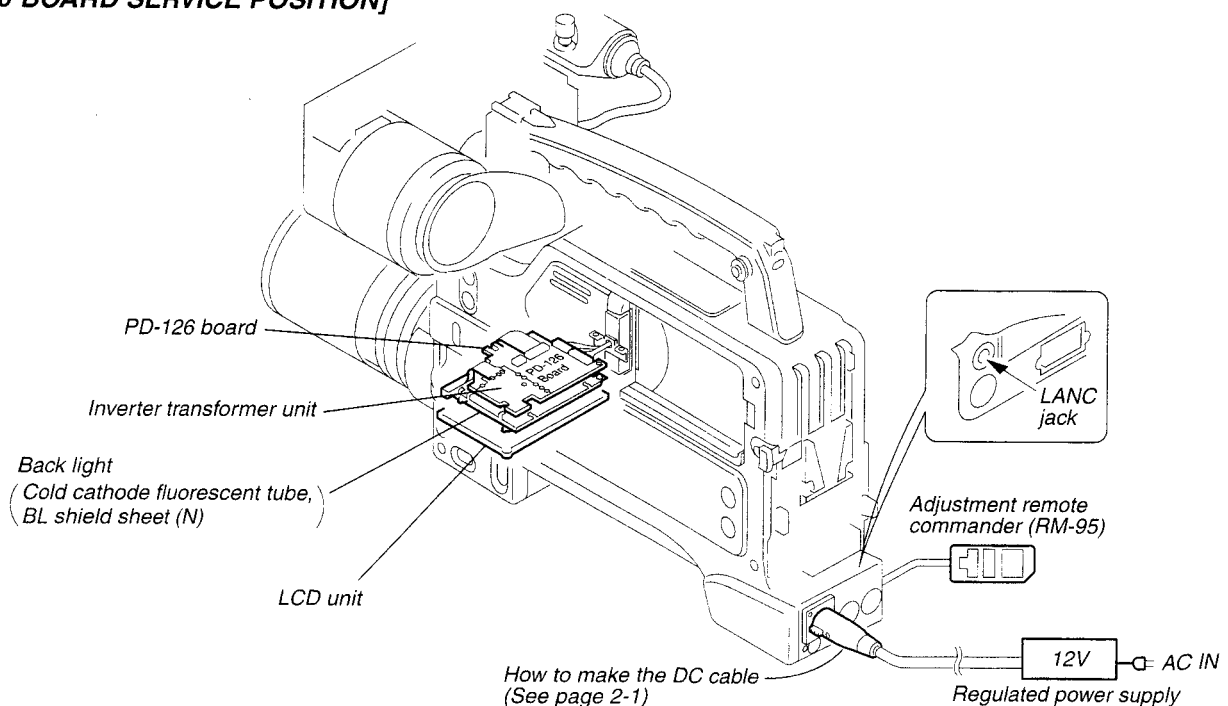


NOTE: Follow the disassembly procedure in the numerical order given.

2-1. LCD SECTION (PD-126 BOARD, INVERTER TRANSFORMER UNIT)

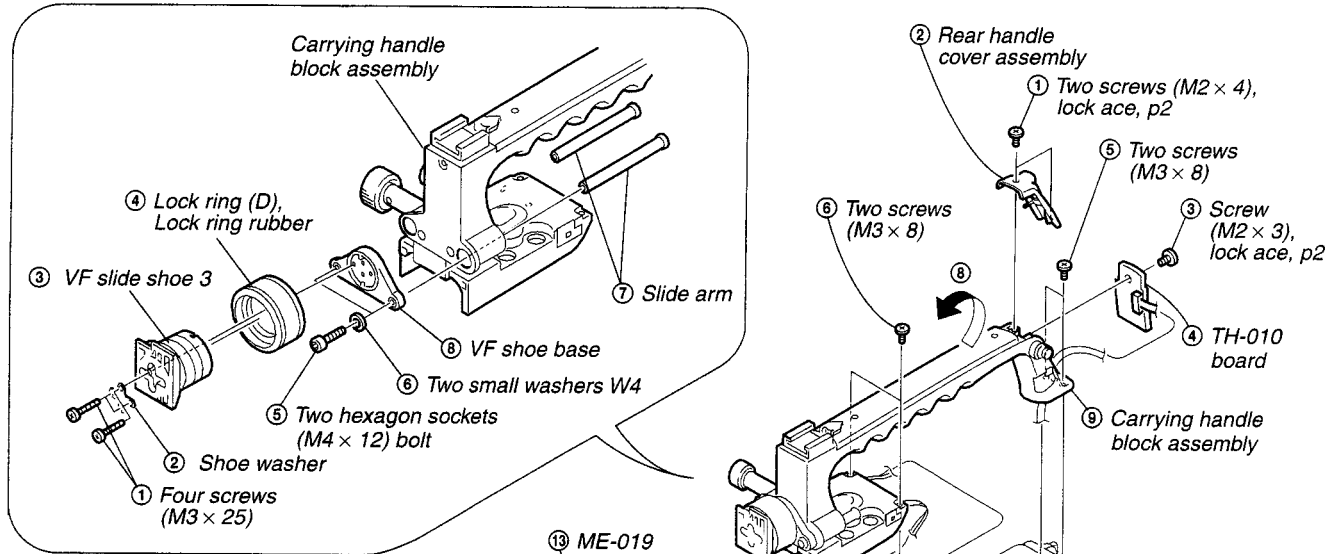


[PD-126 BOARD SERVICE POSITION]

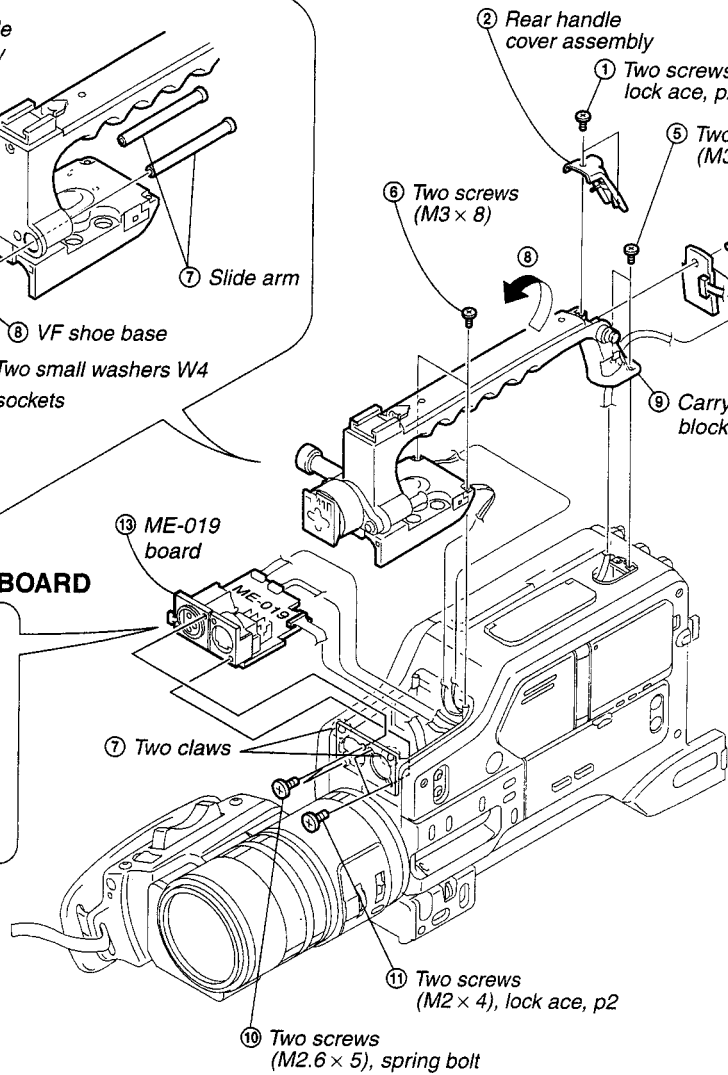
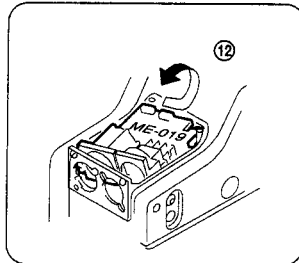


2-2. CARRYING HANDLE SECTION (TH-010, ME-019 BOARDS, VF SHOE BASE)

REMOVING VF SHOE BASE

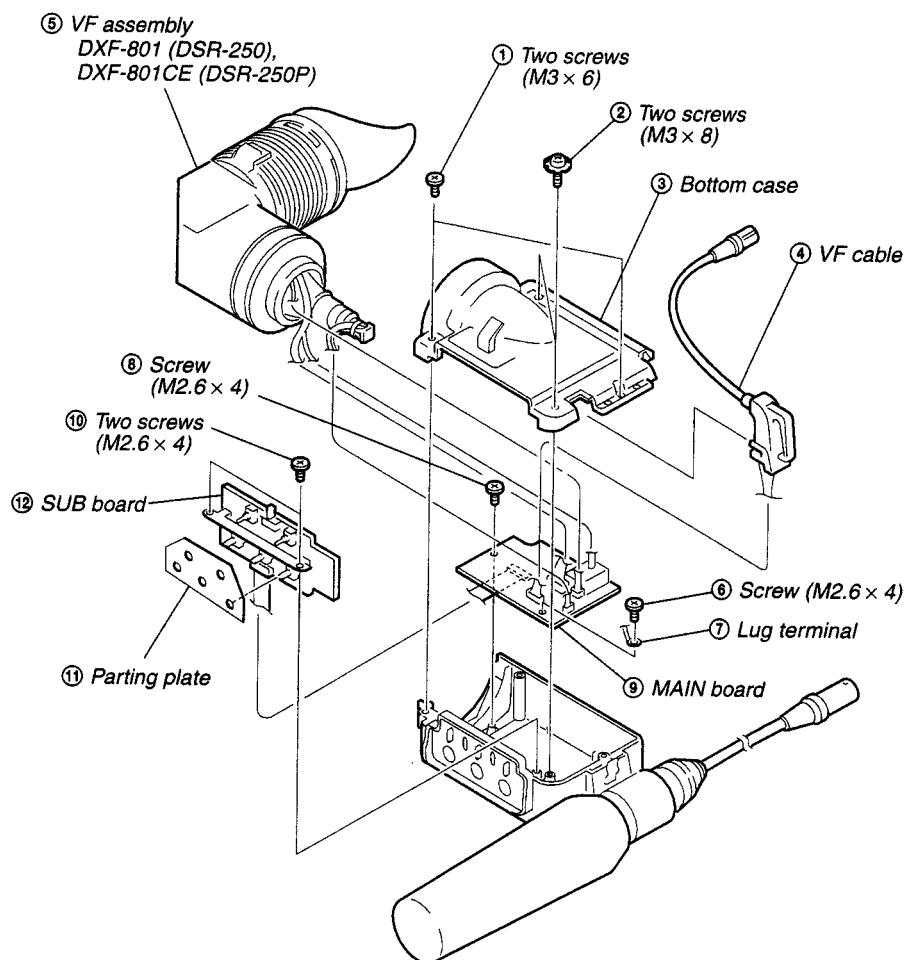


REMOVING THE ME-019 BOARD

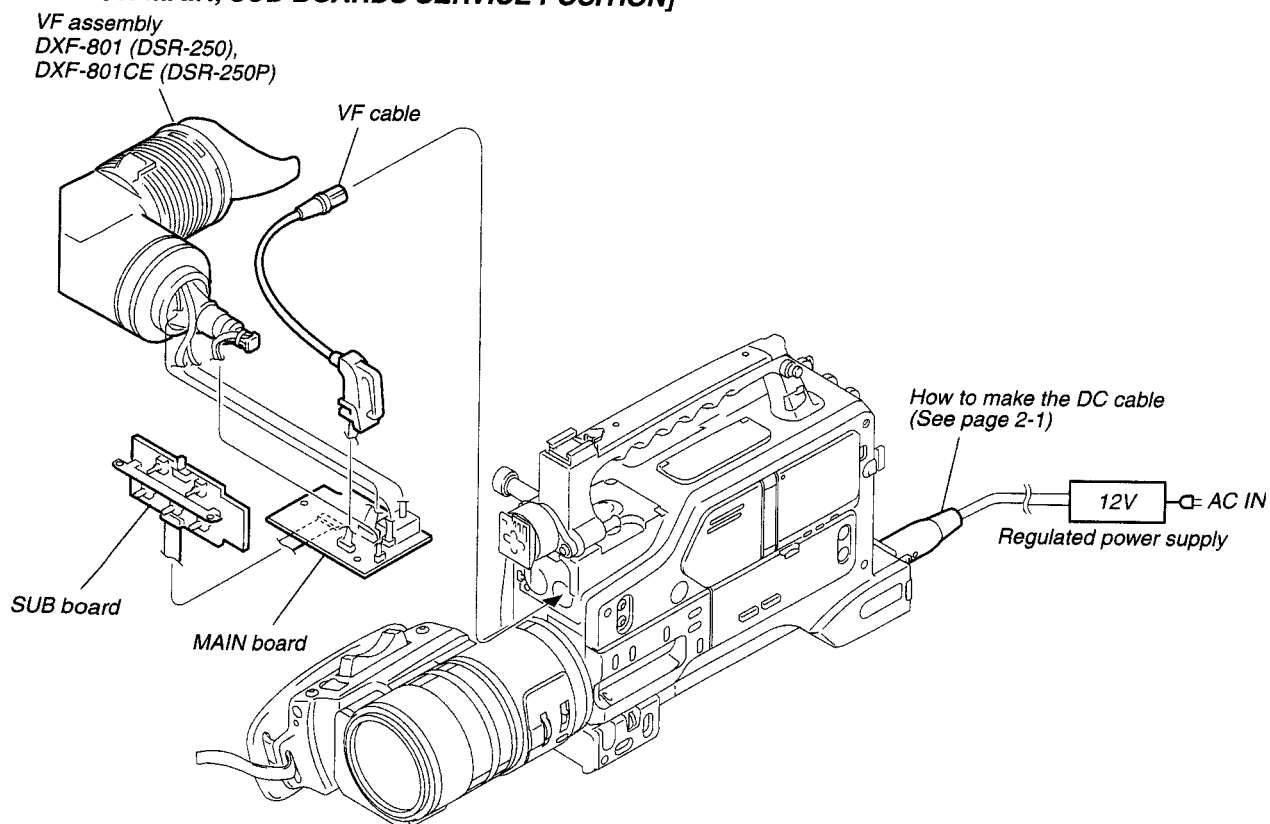


2-3. VF SECTION (MAIN, SUB BOARDS)

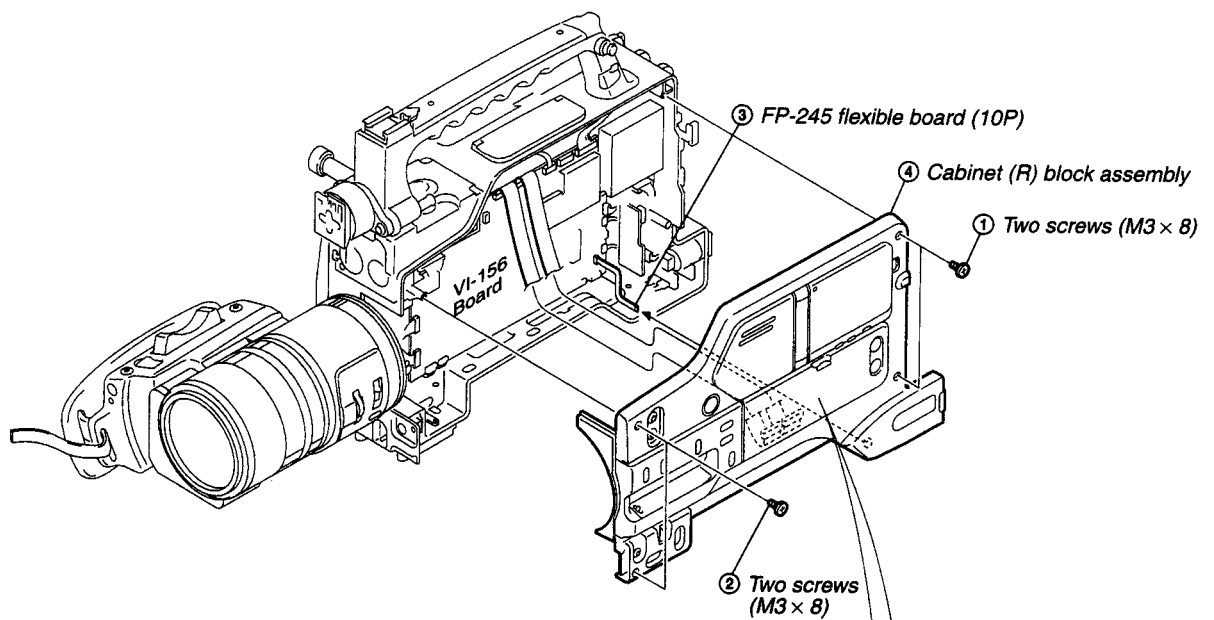
Refer to the separate DXF-801/810CE Service Manual (attach to the end of this manual) [Section 1. Service Information].



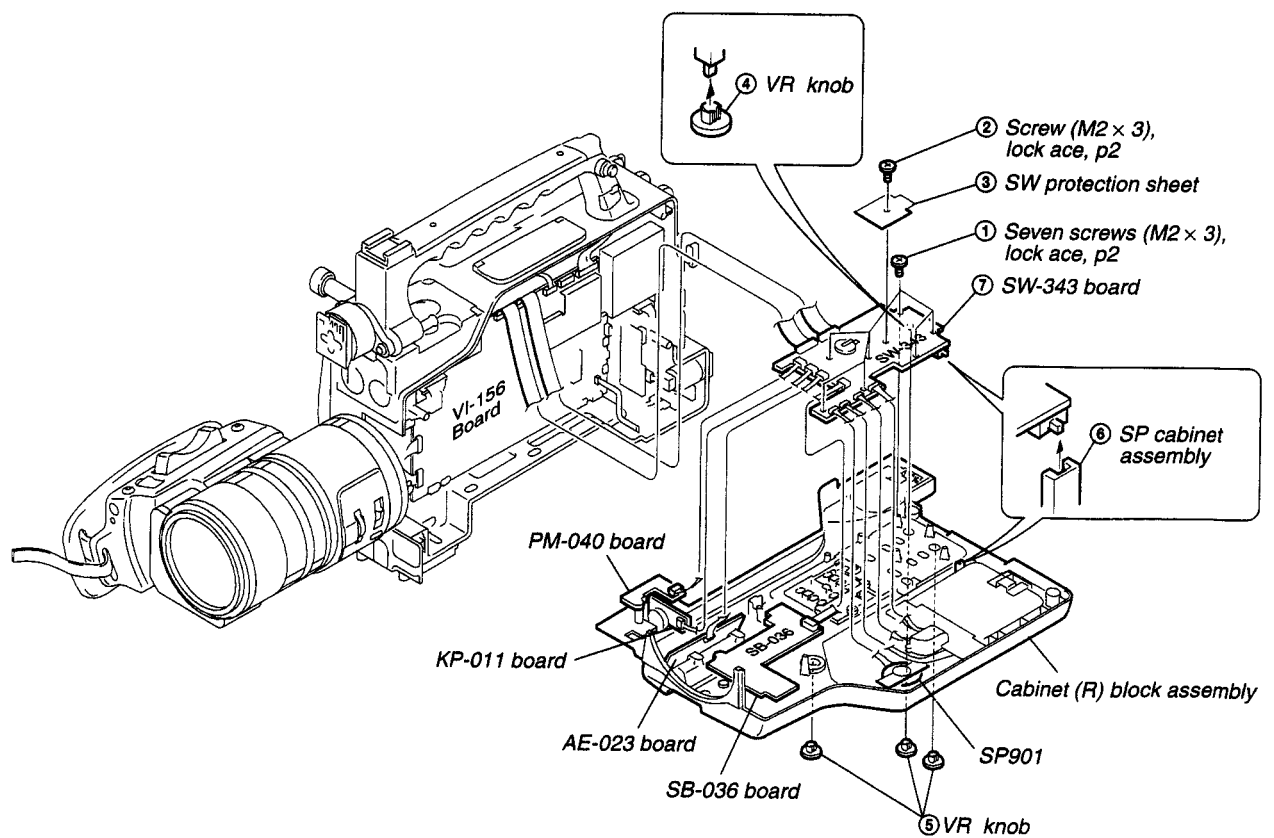
[VF SECTION MAIN, SUB BOARDS SERVICE POSITION]



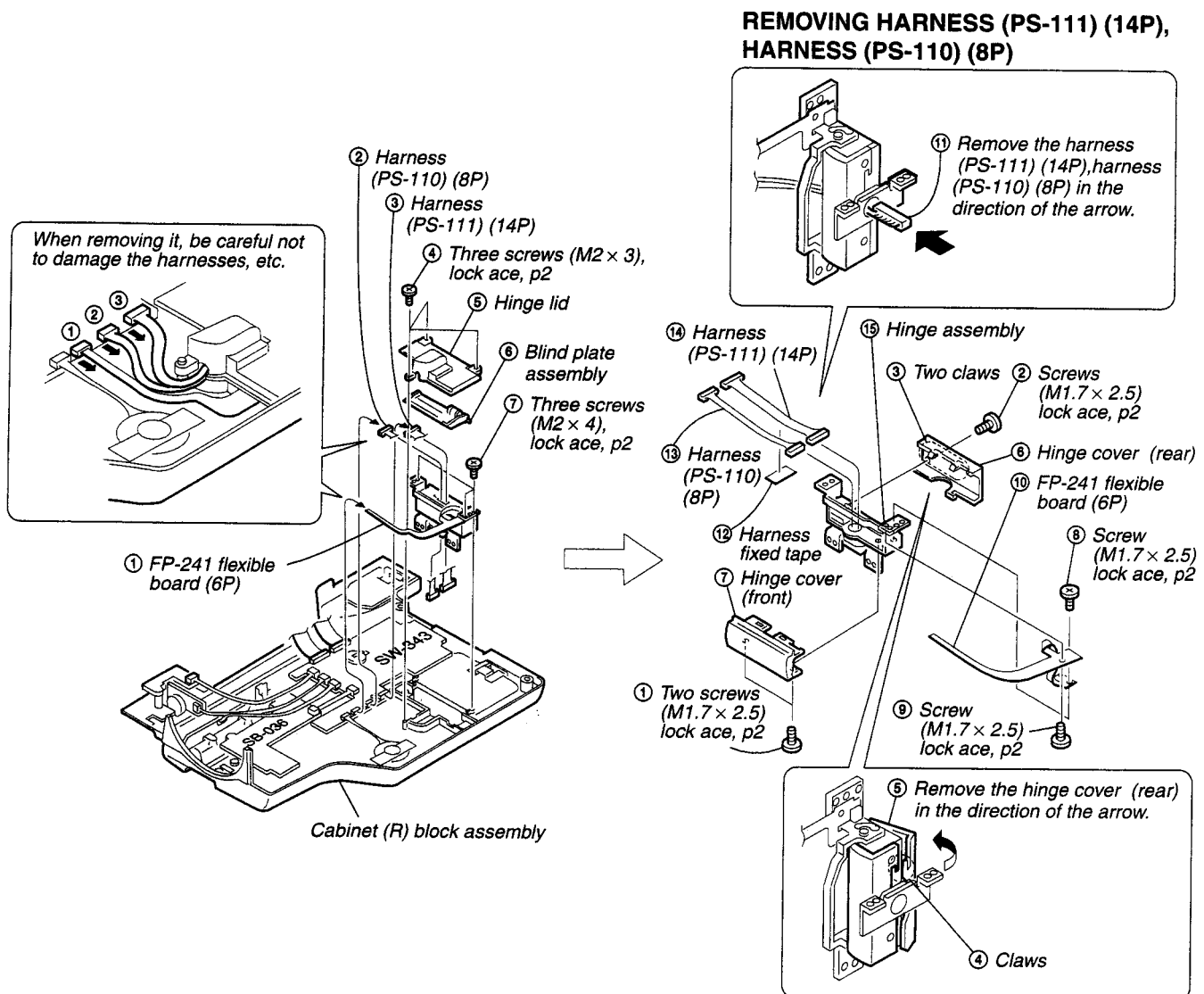
2-4. CABINET (R) BLOCK ASSEMBLY (SW-343 BOARD)



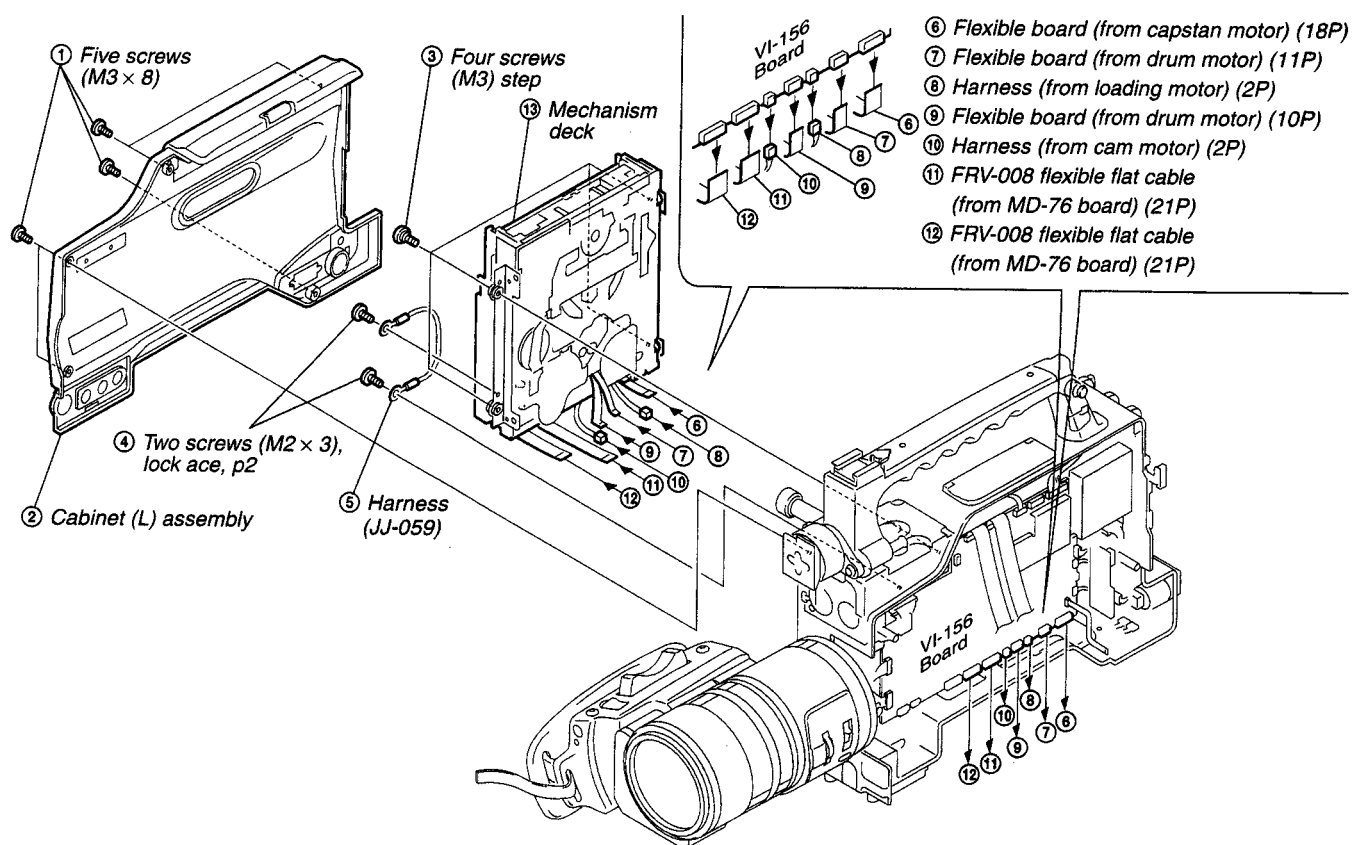
REMOVING THE SW-343 BOARD



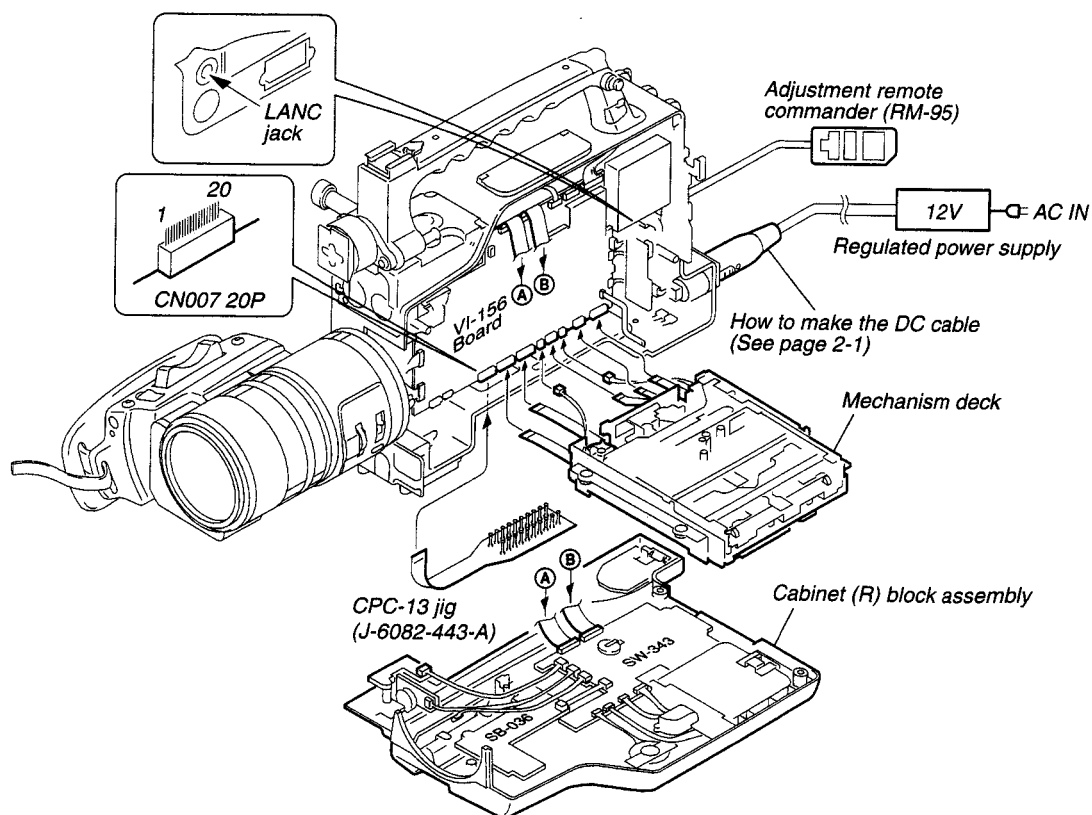
2-5. HINGE SECTION (HINGE ASSEMBLY, FP-241 FLEXIBLE BOARD)



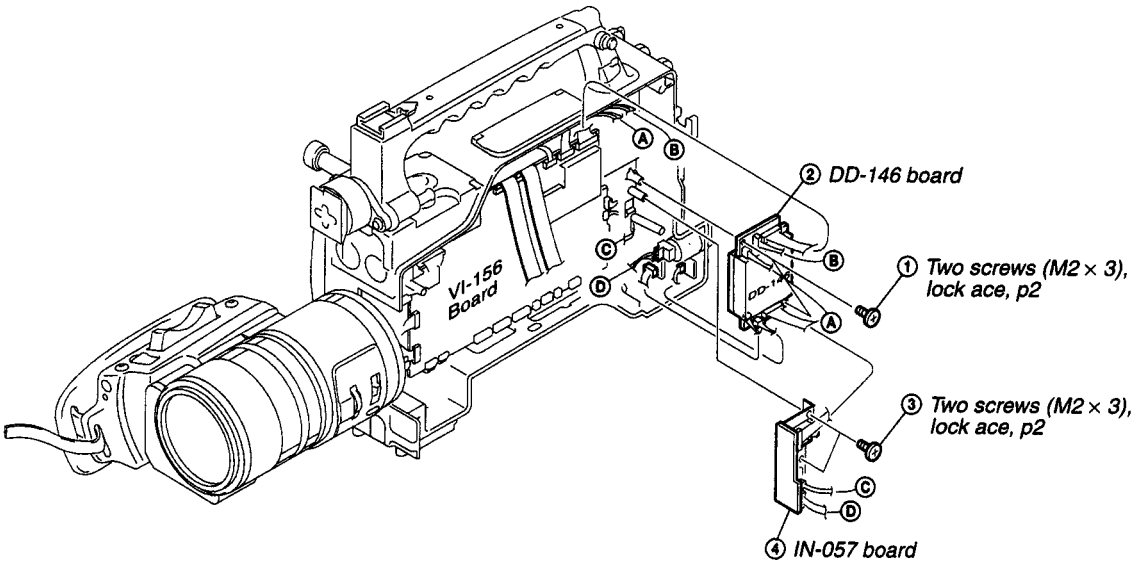
2-6. CABINET (L) ASSEMBLY, MECHANISM DECK



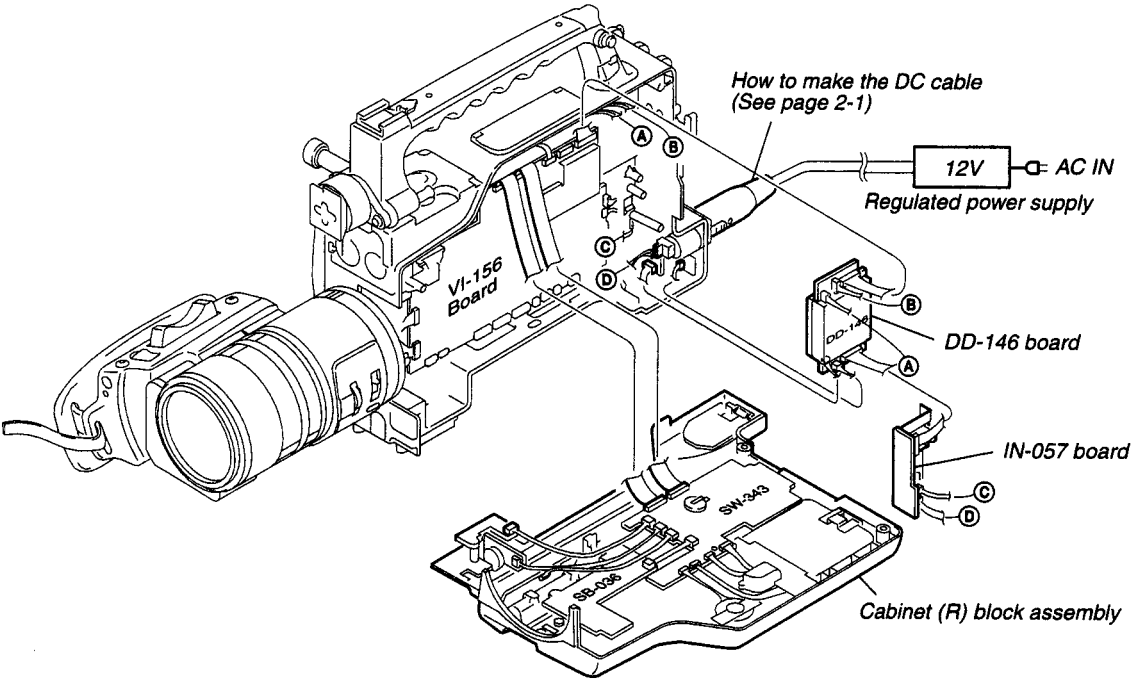
[MECHANISM DECK SERVICE POSITION]



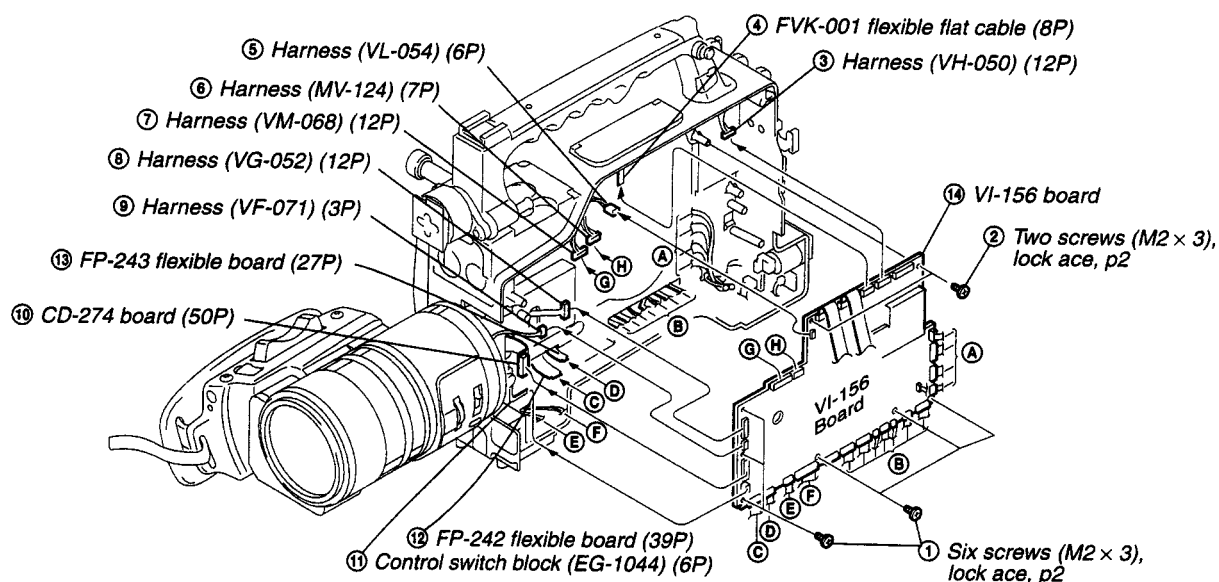
2-7. DD-146, IN-057 BOARDS



[DD-146, IN-057 BOARDS SERVICE POSITION]



2-8. VI-156 BOARD



[SERVICE POSITION TO CHECK THE VTR SECTION]

Connection to Check the VTR Section

To check the VTR Section, set the VTR to the "forced VTR power ON" mode.

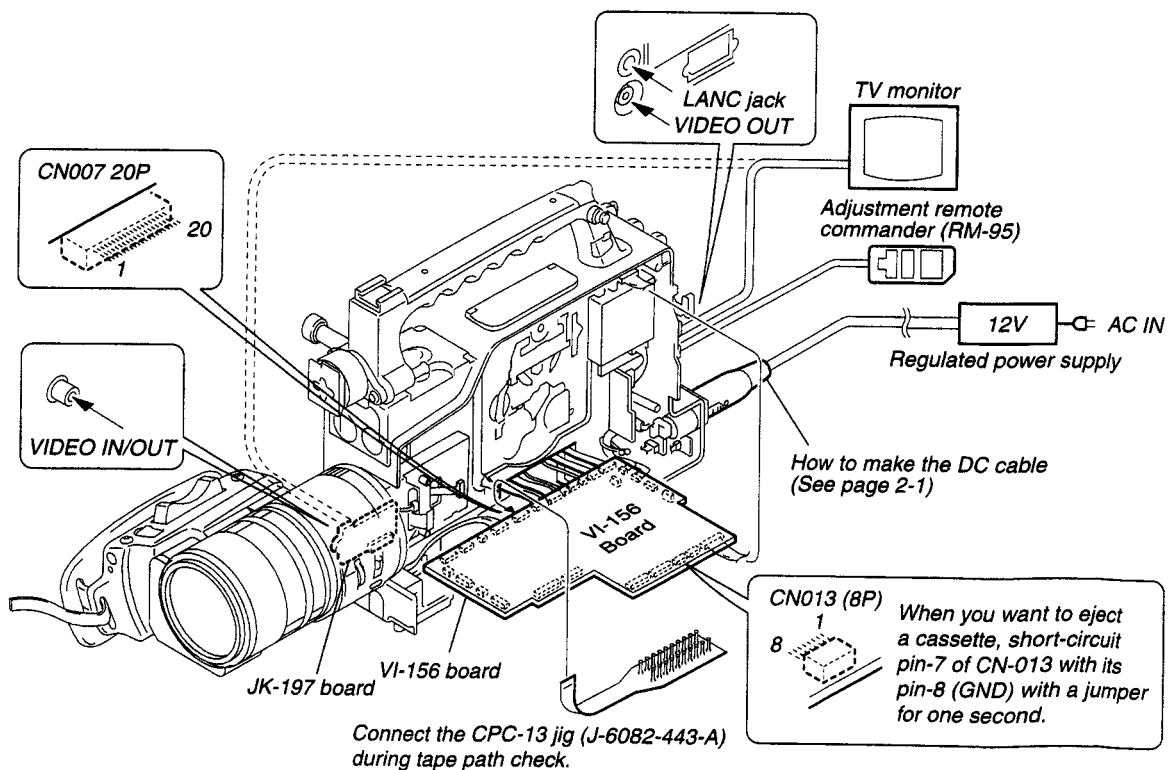
Operate the VTR functions using the adjustment remote commander (with the HOLD switch set in the OFF position)
(However, connect the cabinet (L) assembly when cassette is going to be ejected only.)

Setting the "Forced VTR Power ON" mode

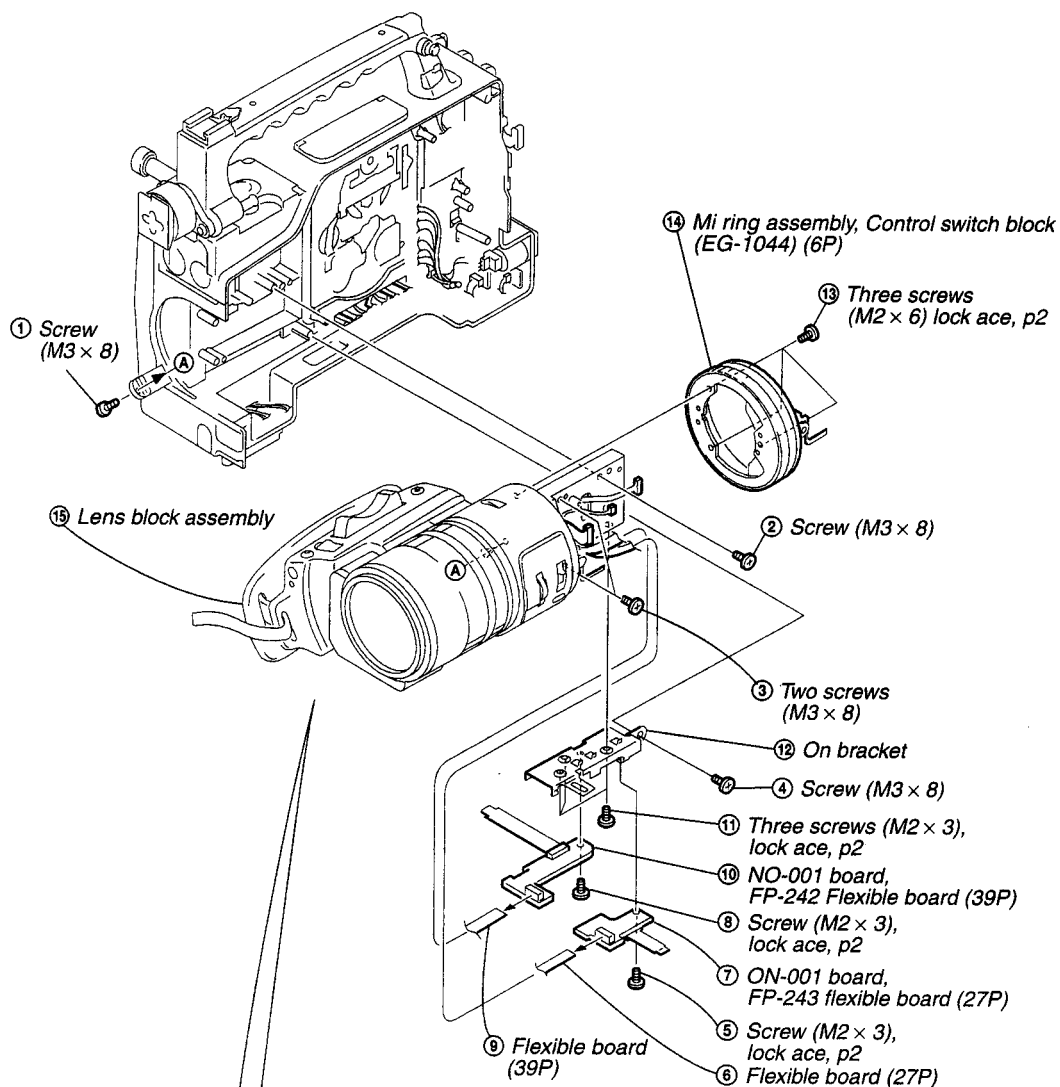
- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: D, address: 10, set data: 02, and press the PAUSE button of the adjustment remote commander.

Exiting the "Forced VTR Power ON" mode

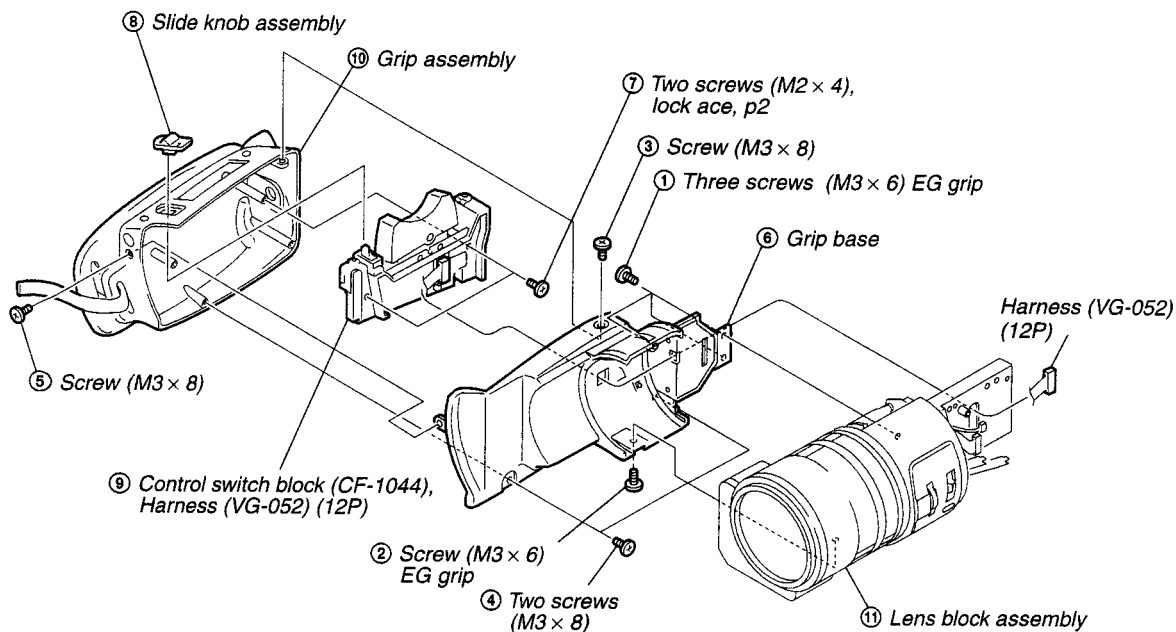
- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjustment remote commander.
- 3) Select page: 0, address: 01, and set data: 00.



2-9. LENS BLOCK ASSEMBLY (ON-001, NO-001 BOARDS, CONTROL SWITCH BLOCK (CF-1044))



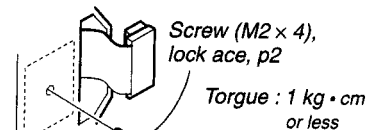
REMOVING CONTROL SWITCH BLOCK (CF-1044)



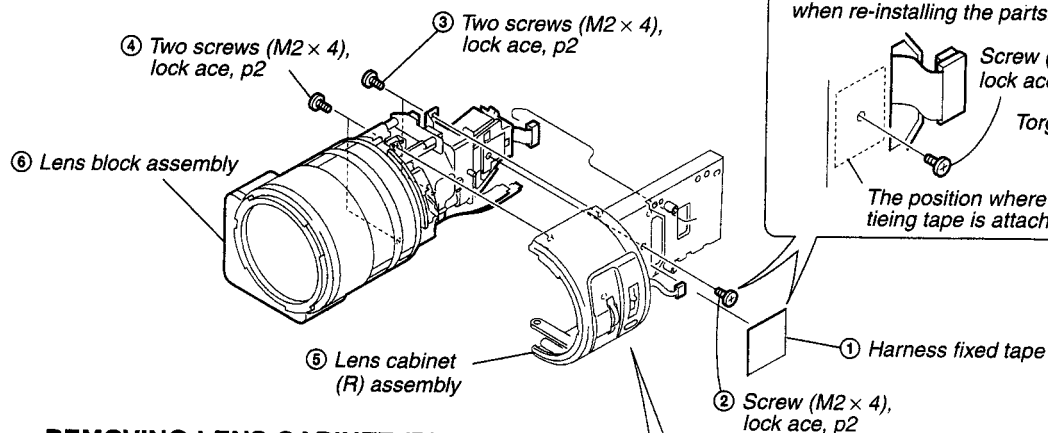
2-10.LENS BLOCK ASSEMBLY (LENS CABINET (R))

CAUTION WHEN INSTALLING AND REMOVING SCREWS

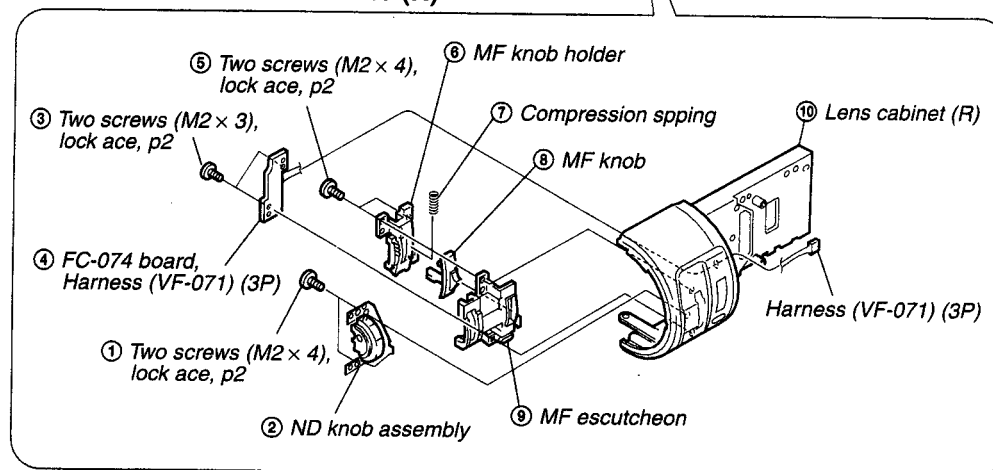
When you want to remove screws, remove this screw first. Also remove this screw last when re-installing the parts.



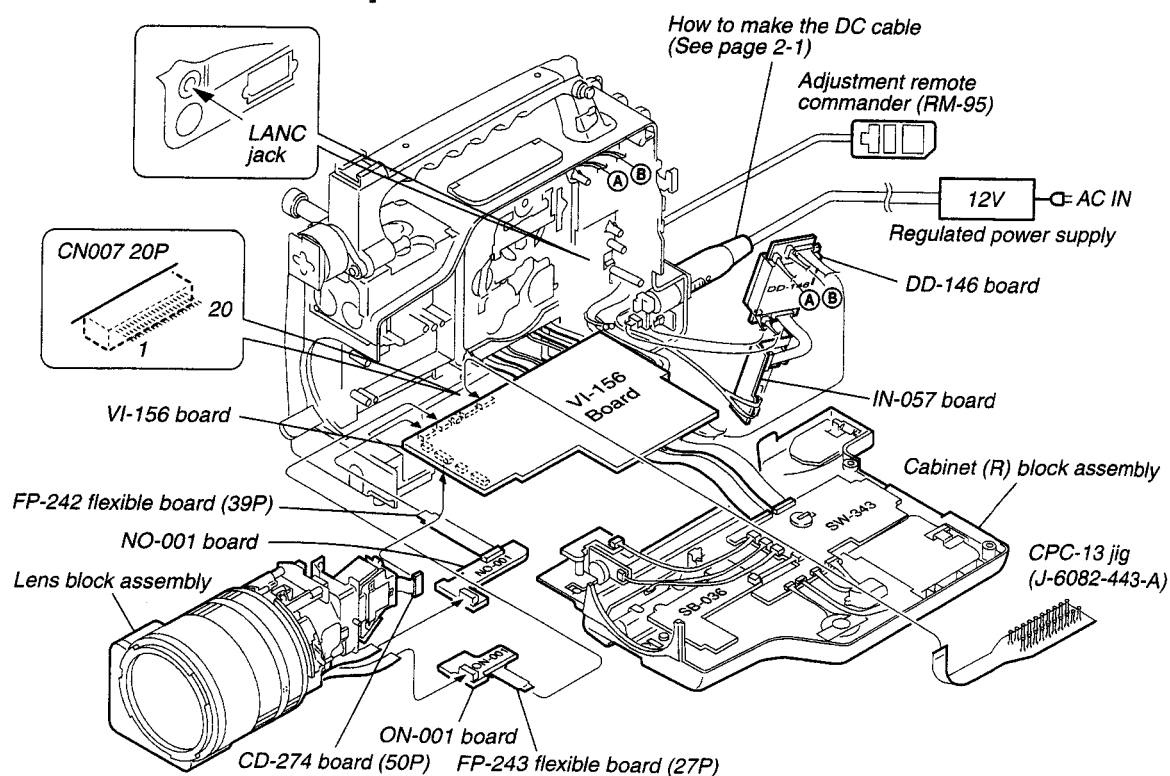
The position where the harness tying tape is attached.



REMOVING LENS CABINET (R)



[VI-156 BOARD SERVICE POSITION]



[SERVICE POSITION TO CHECK THE CAMERA SECTION]

Connection to Check the CAMERA Section

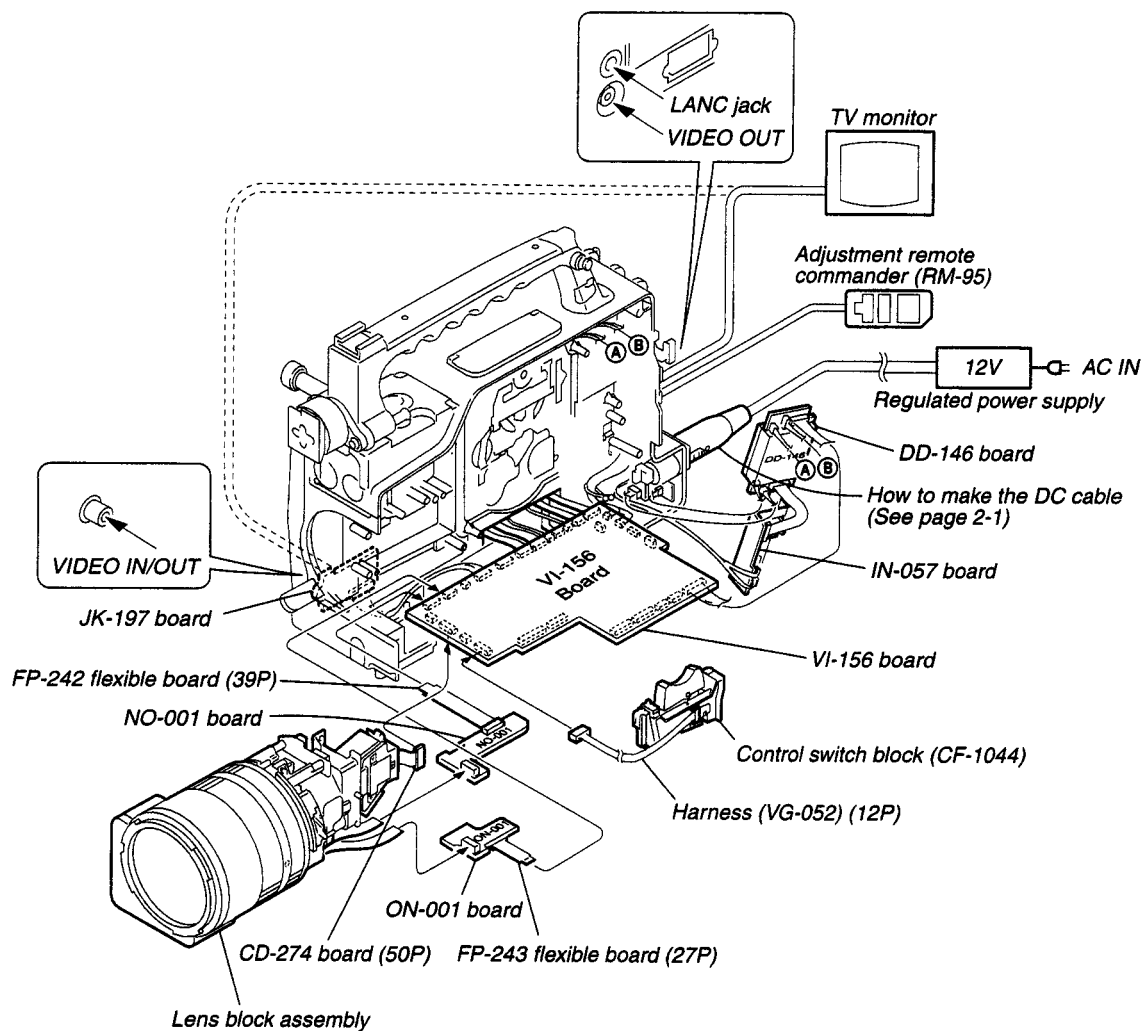
To check the CAMERA Section, set the CAMERA to the "forced CAMERA power ON" mode.

Setting the "Forced CAMERA Power ON" mode

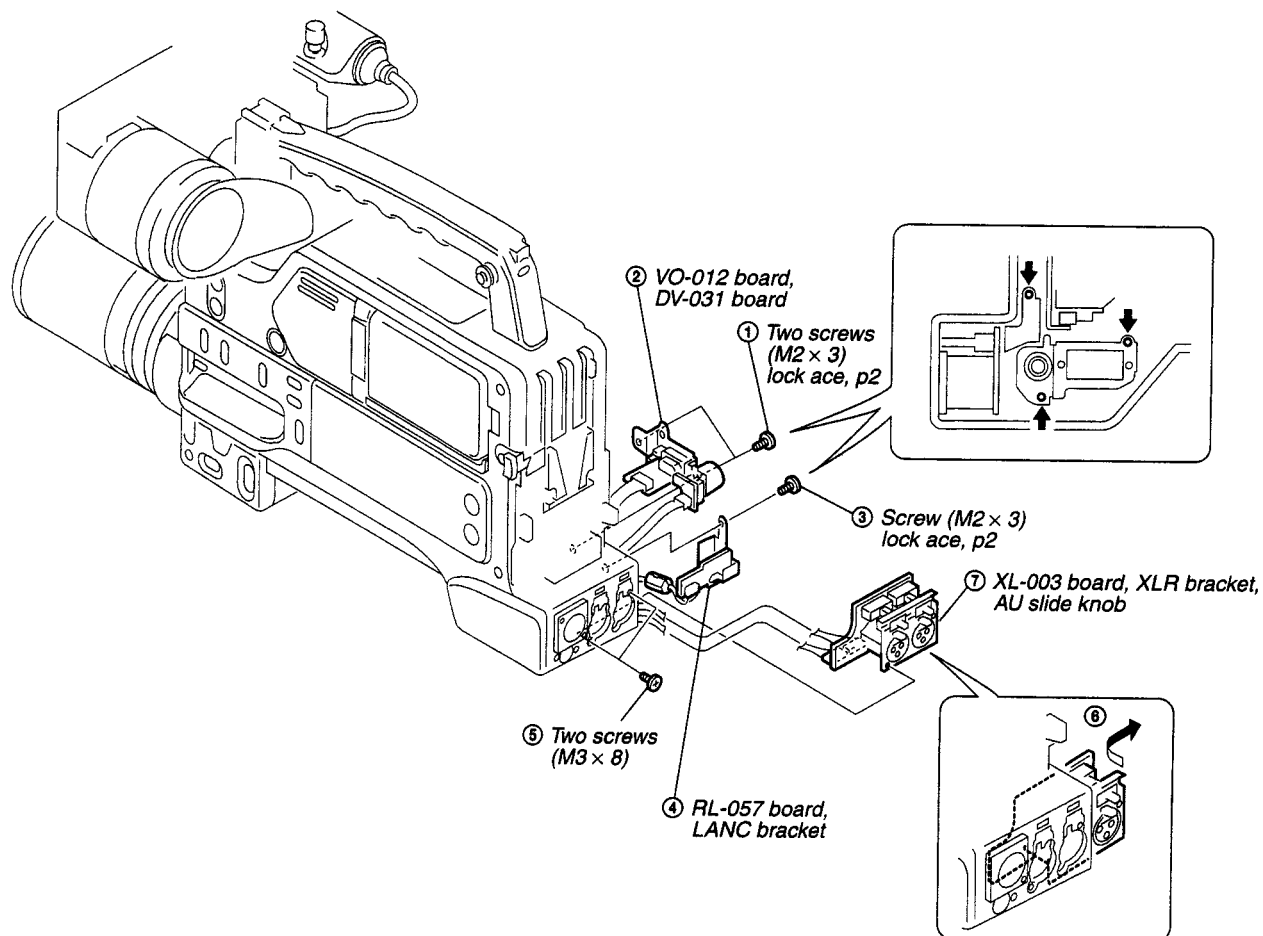
- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: D, address: 10, set data: 01, and press the PAUSE button of the adjustment remote commander.

Exiting the "Forced CAMERA Power ON" mode

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjustment remote commander.
- 3) Select page: 0, address: 01, and set data: 00.

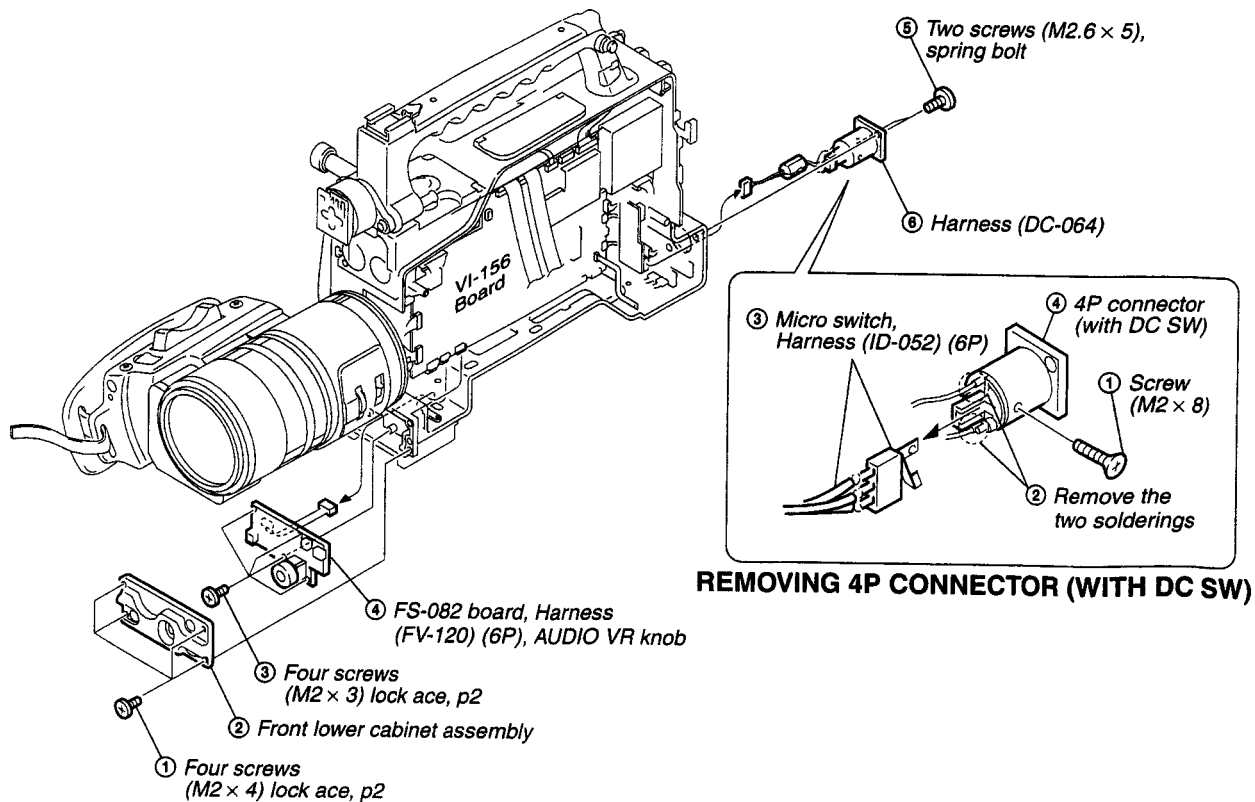


2-11.XL-003, VO-012, DV-031, RL-057 BOARDS



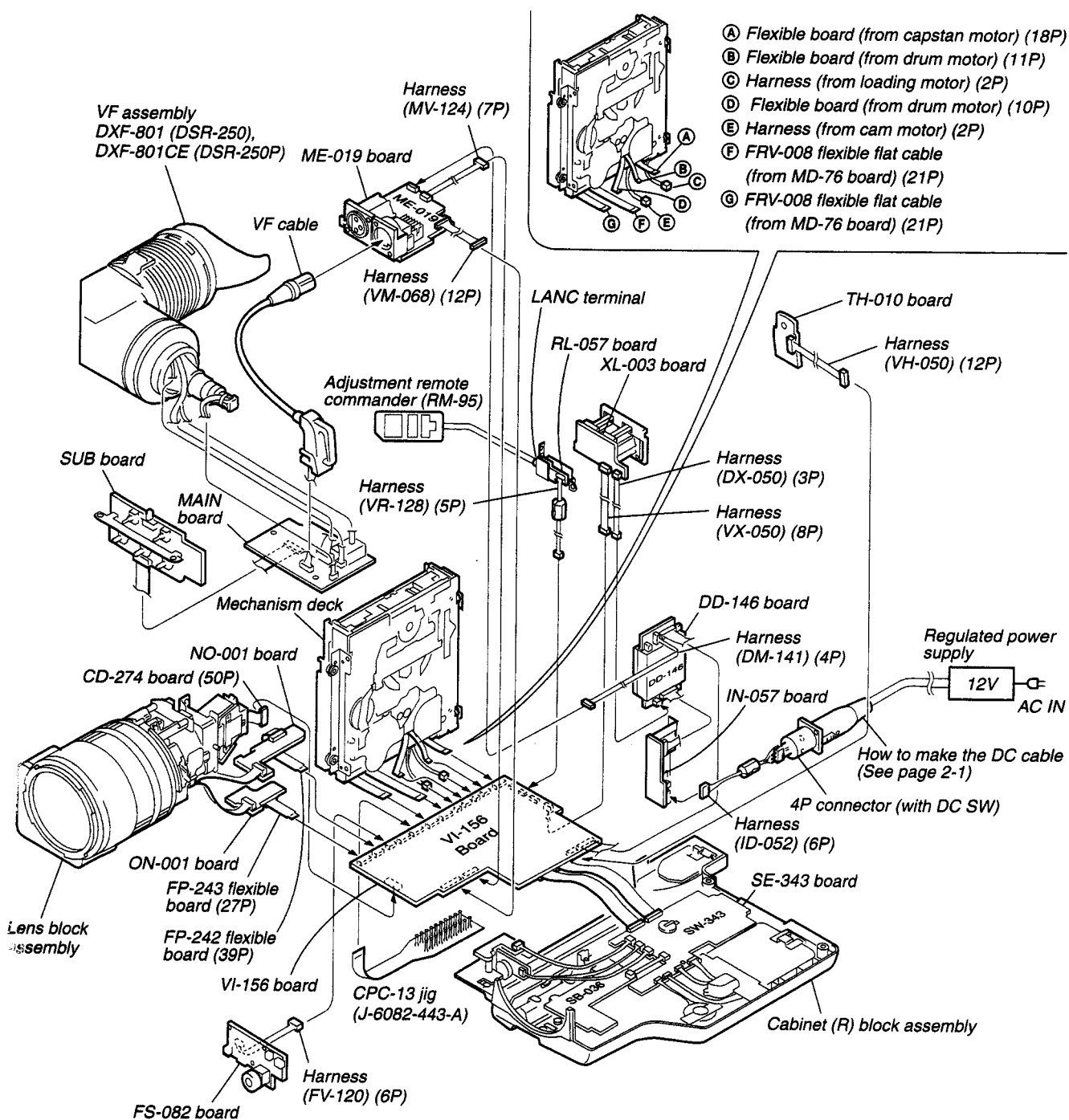
REMOVING XL-003 BOARD

2-12.FS-082 BOARD, 4P CONNECTOR (WITH DC SW)



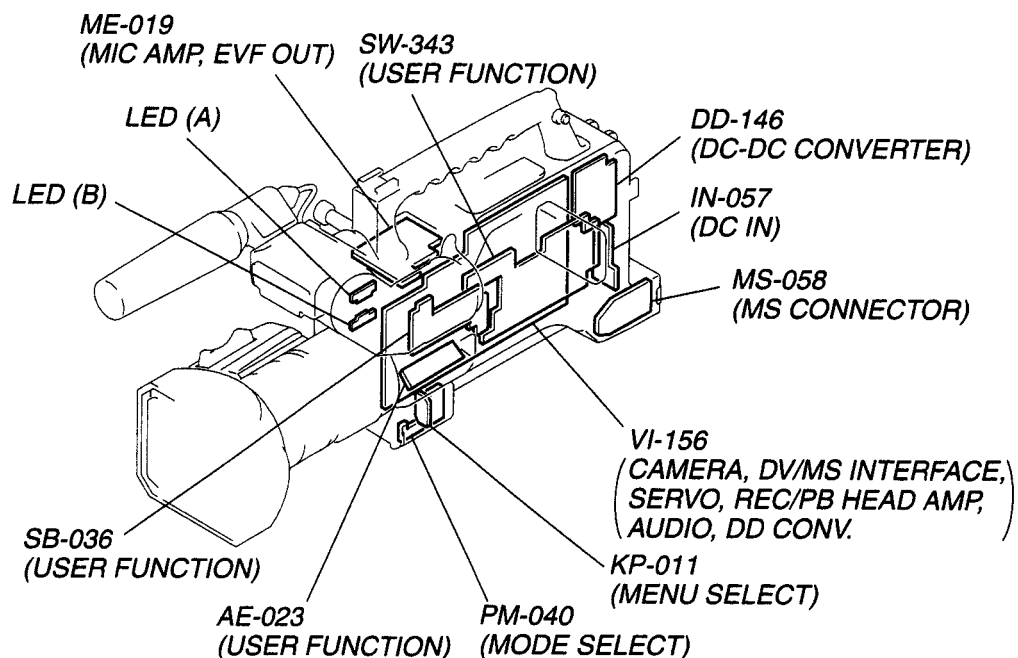
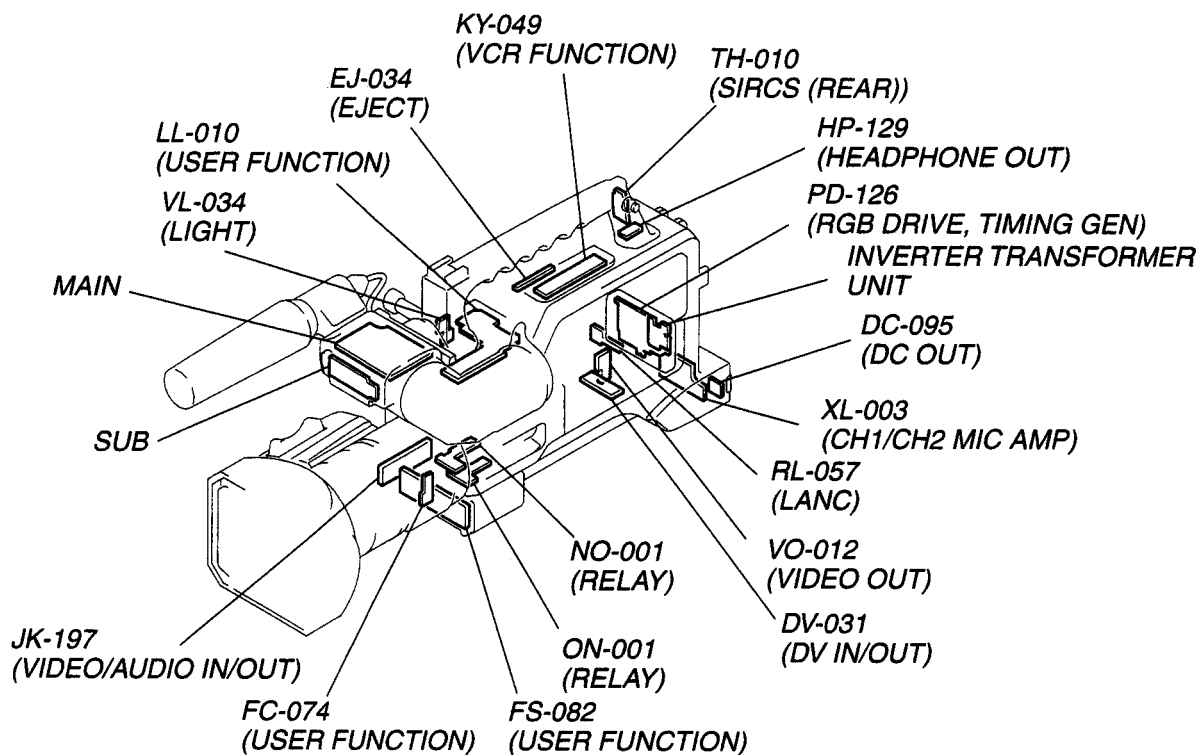
REMOVING 4P CONNECTOR (WITH DC SW)

[CONNECTION DIAGRAM FOR SERVICE POSITION (Mainly for voltage measurement and check)]
(TH-010, ME-19, MAIN, SUB, SW-343, DD-146, IN-057, VI-156, ON-001, NO-001, CD-274, XL-003, RL-057, FS-082 boards, Mechanism deck)



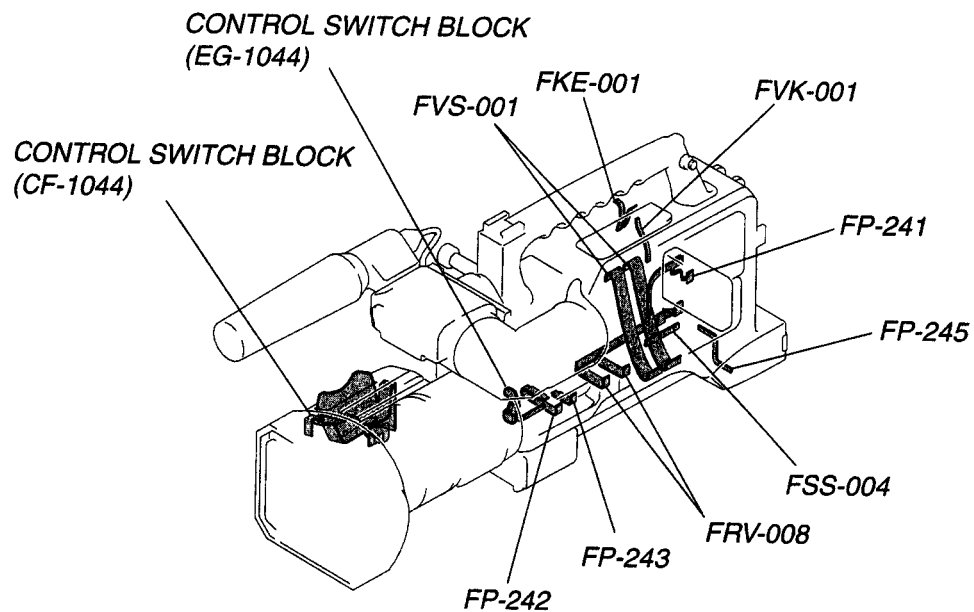
2-13. CIRCUIT BOARDS LOCATION

The circuit boards contained in the mechanism deck and that in the zoom lens are not shown.



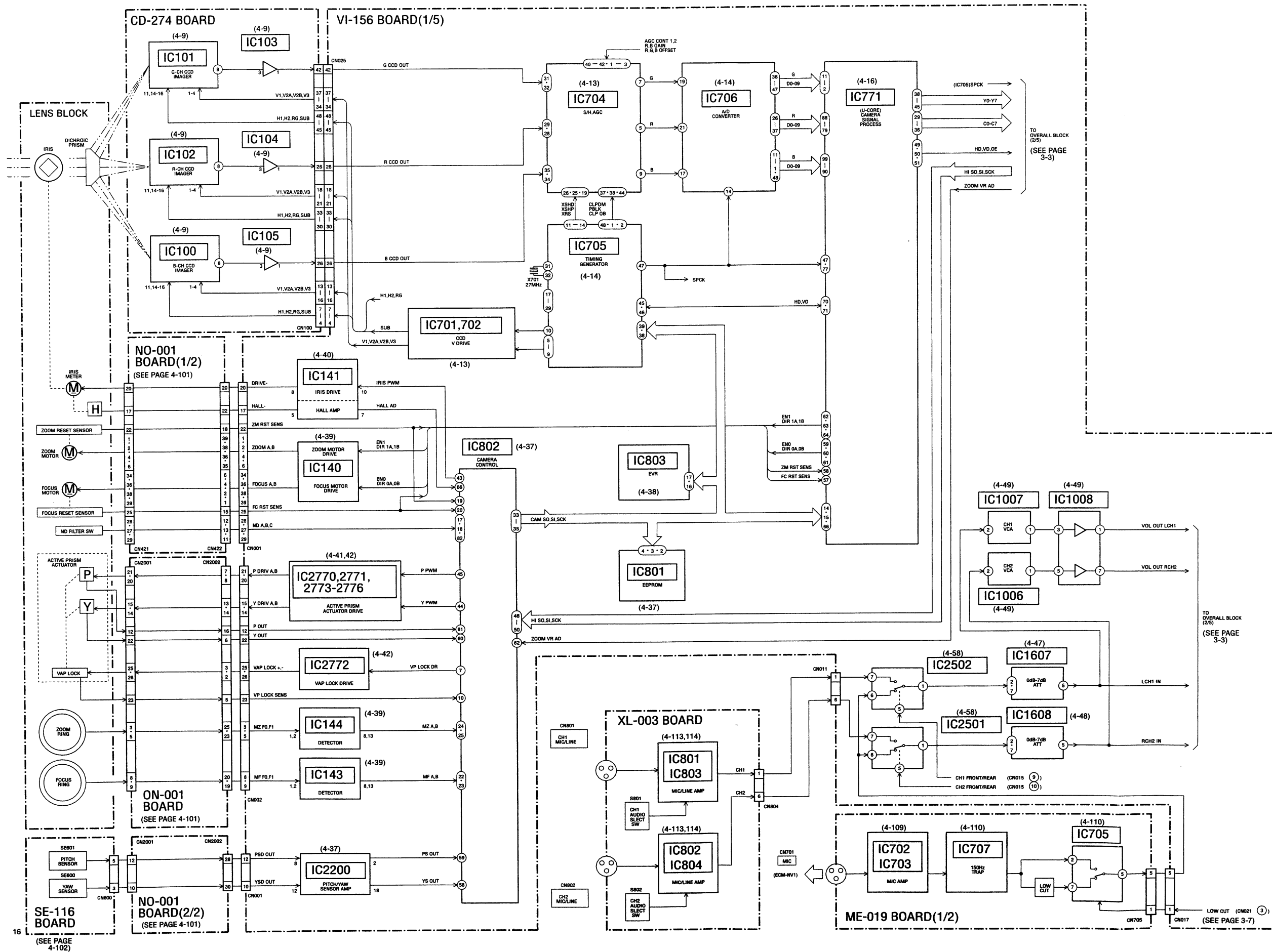
2-14. FLEXIBLE BOARDS LOCATION

The flexible boards contained in the mechanism deck and that in the zoom lens are not shown.

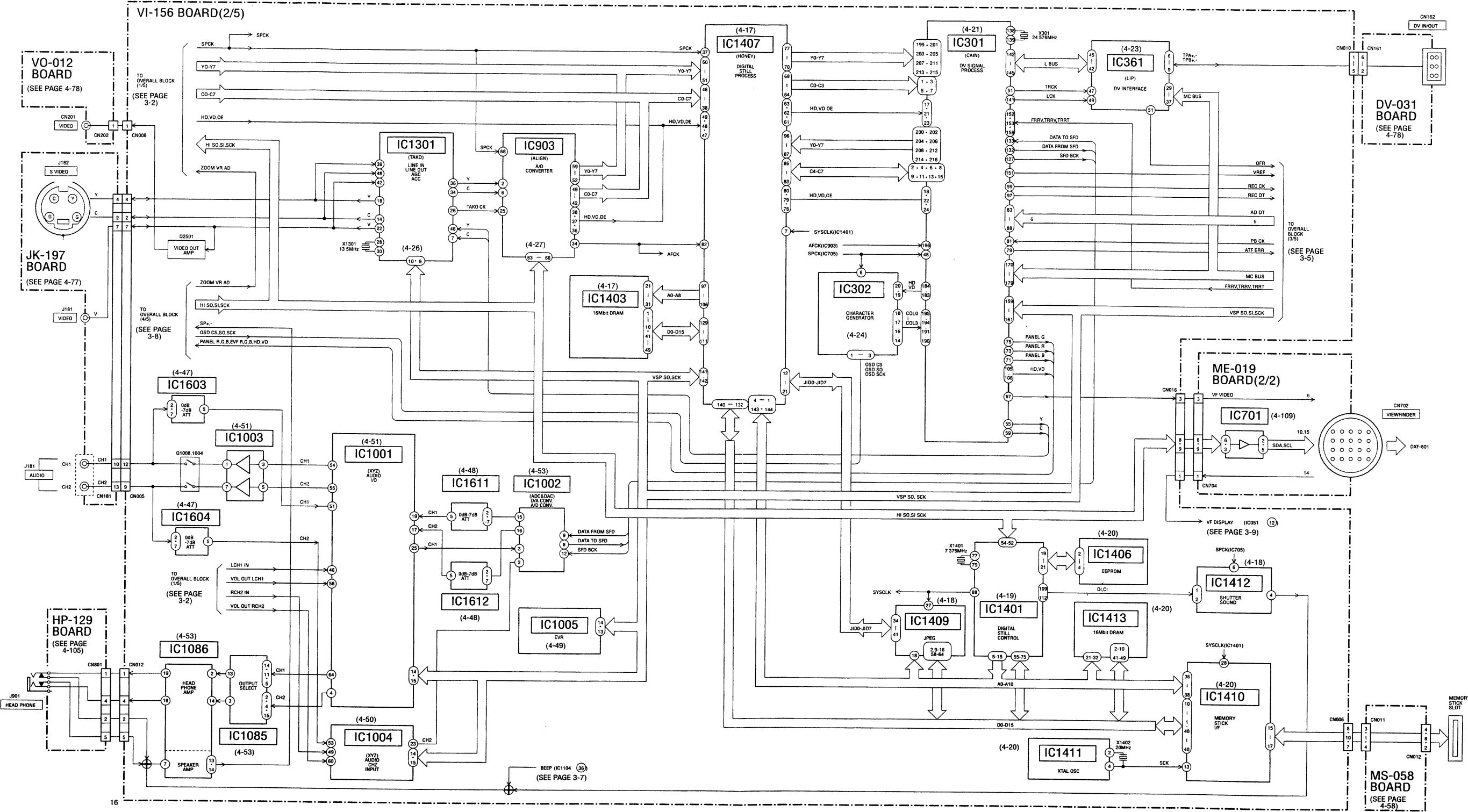


SECTION 3 BLOCK DIAGRAMS

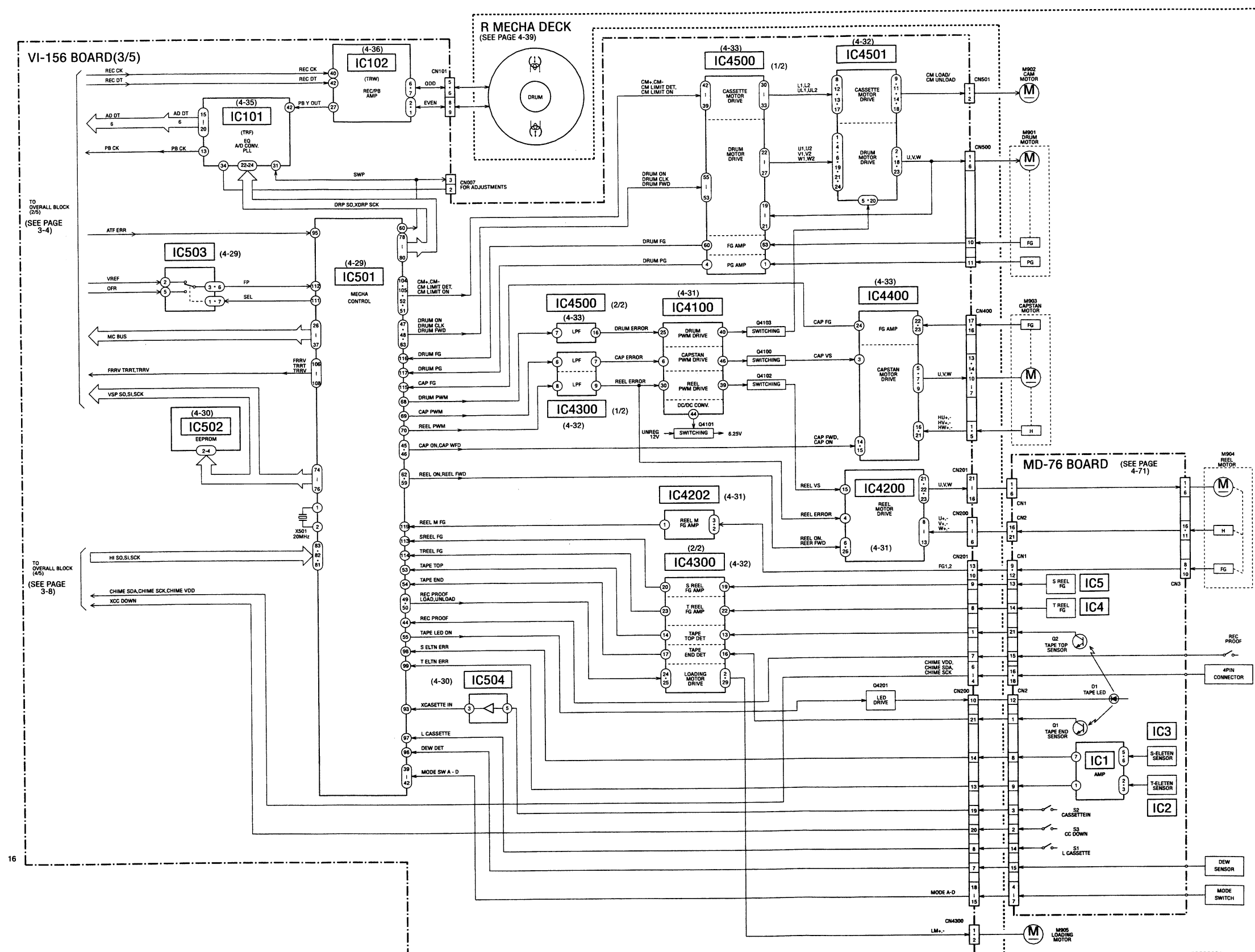
3-1. OVERALL BLOCK DIAGRAM (1/5) () : Page No. shown in () indicates the page to refer on the schematic diagram.



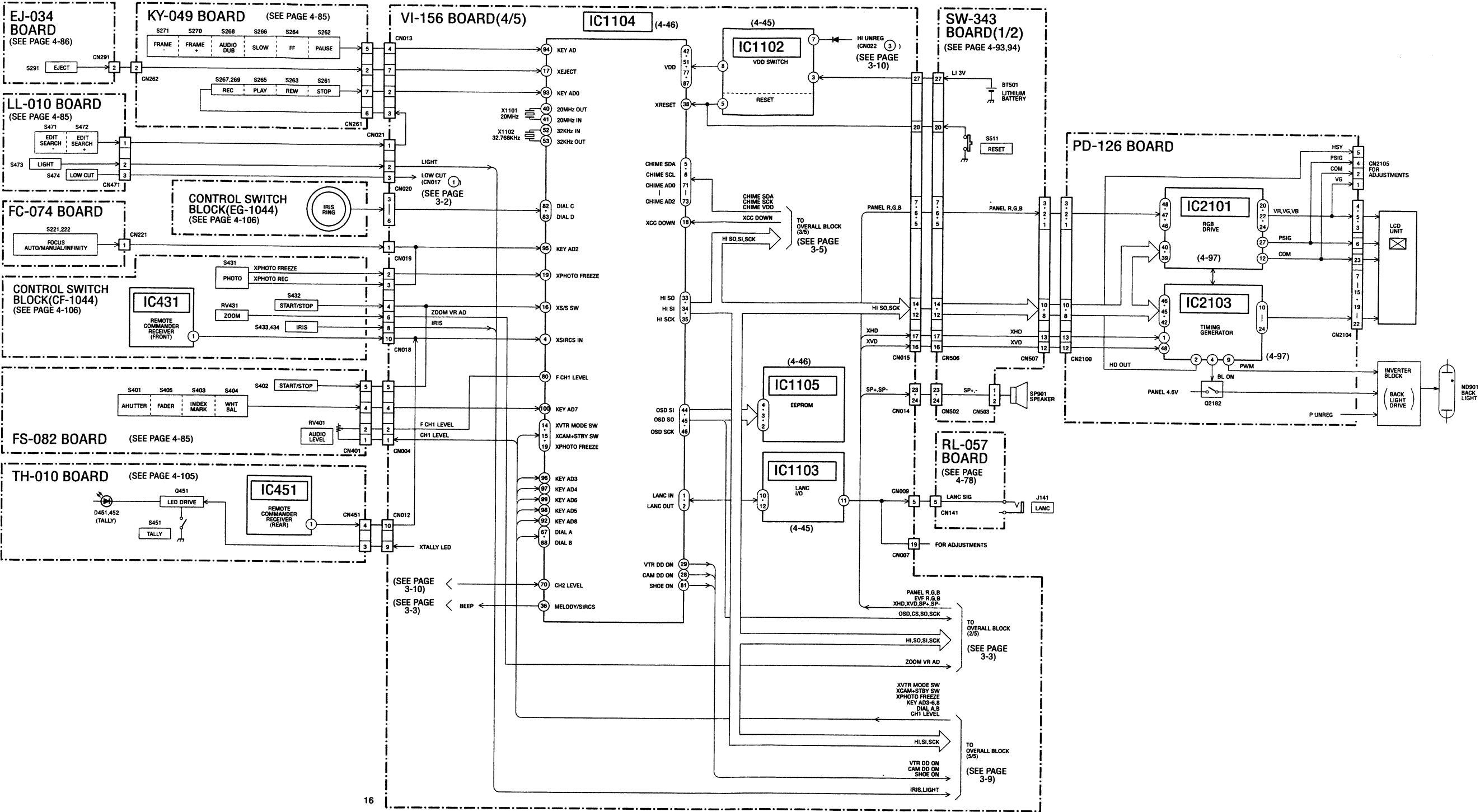
3-2. OVERALL BLOCK DIAGRAM (2/5) () : Page No. shown in () indicates the page to refer on the schematic diagram.



3-3. OVERALL BLOCK DIAGRAM (3/5) () : Page No. shown in () indicates the page to refer on the schematic diagram.

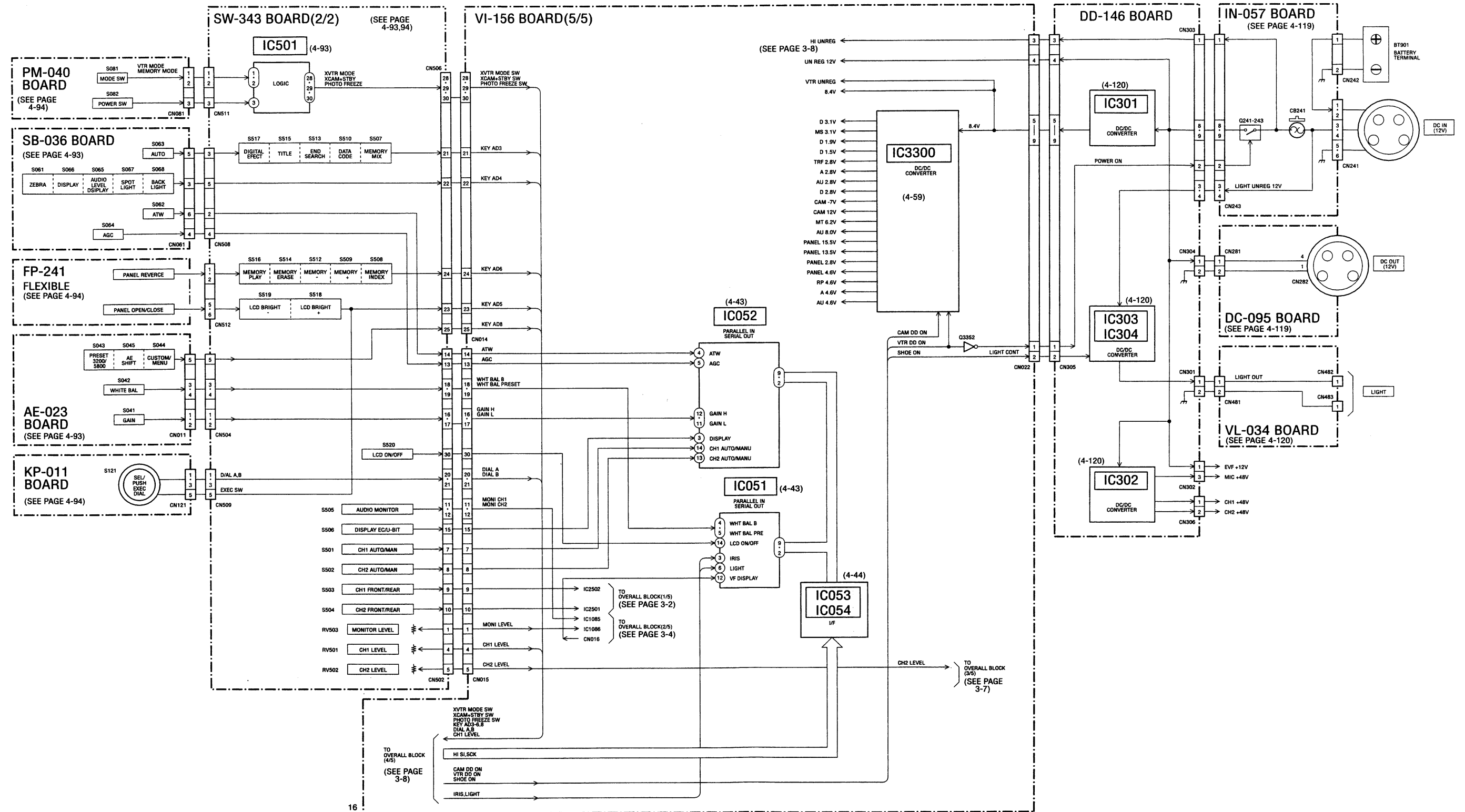


3-4. OVERALL BLOCK DIAGRAM (4/5) () : Page No. shown in () indicates the page to refer on the schematic diagram.



3-5. OVERALL BLOCK DIAGRAM (5/5)

() : Page No. shown in () indicates the page to refer on the schematic diagram.



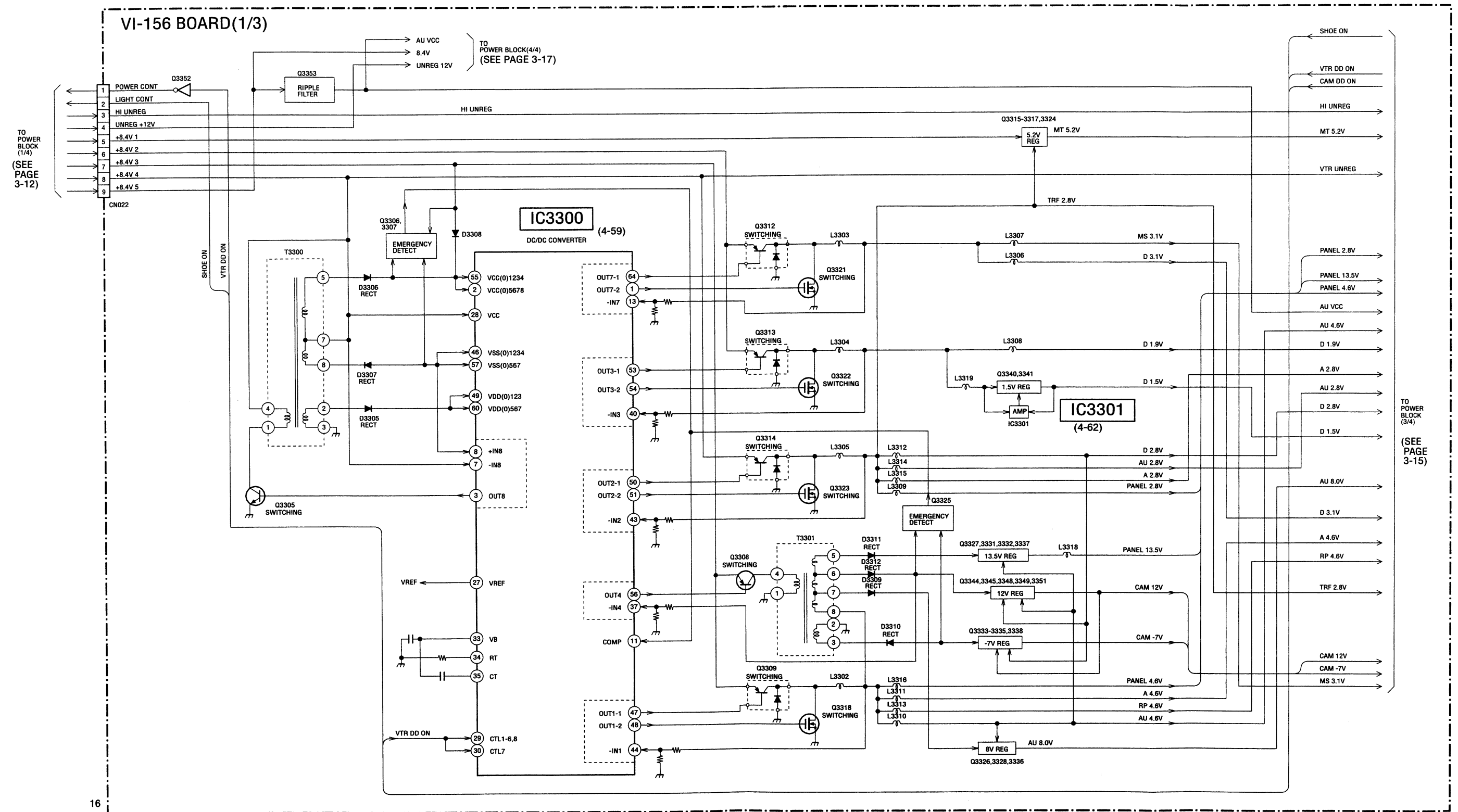
3-11

3-12



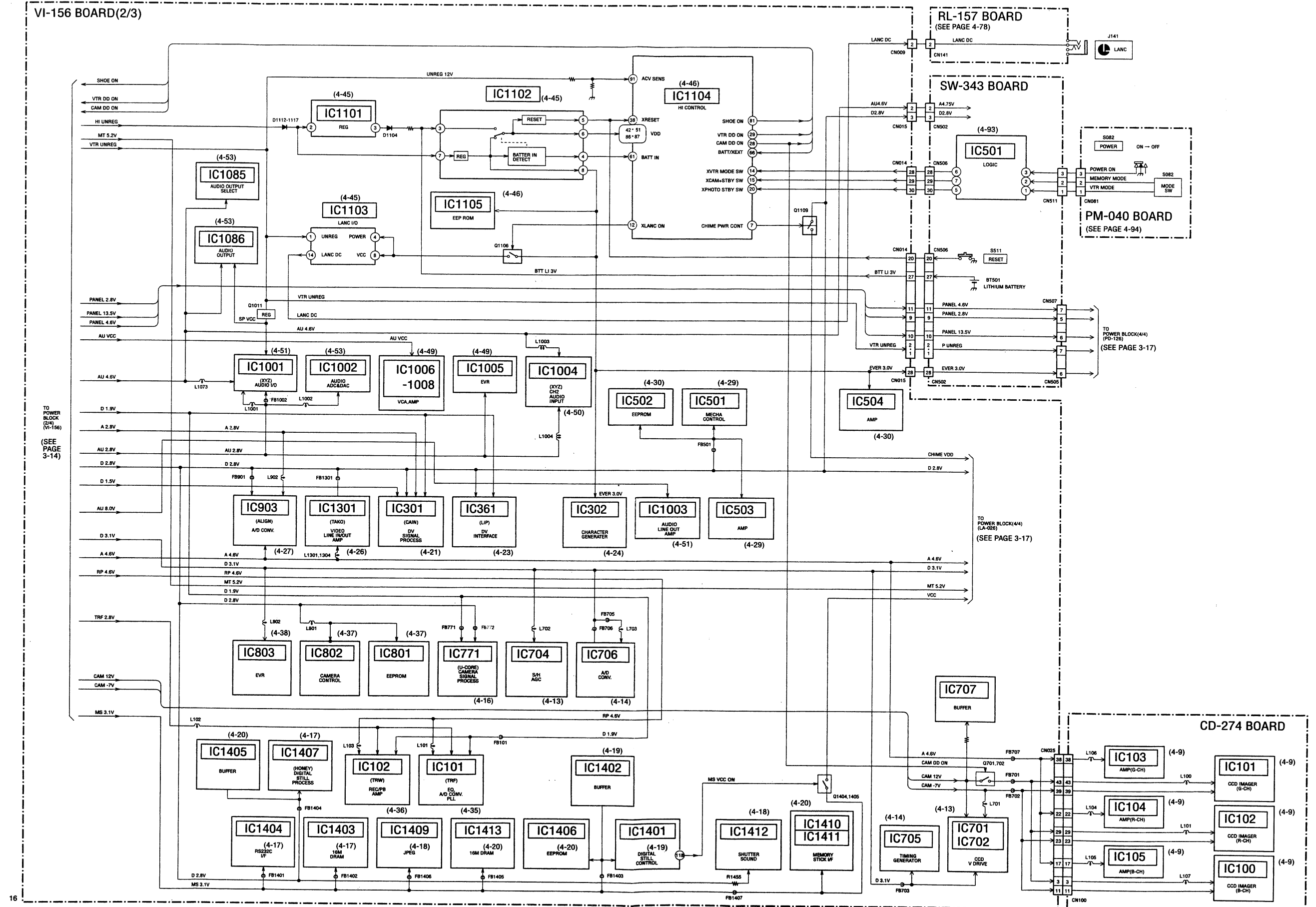
3-7. POWER BLOCK DIAGRAM (2/4)

() : Page No. shown in () indicates the page to refer on the schematic diagram.

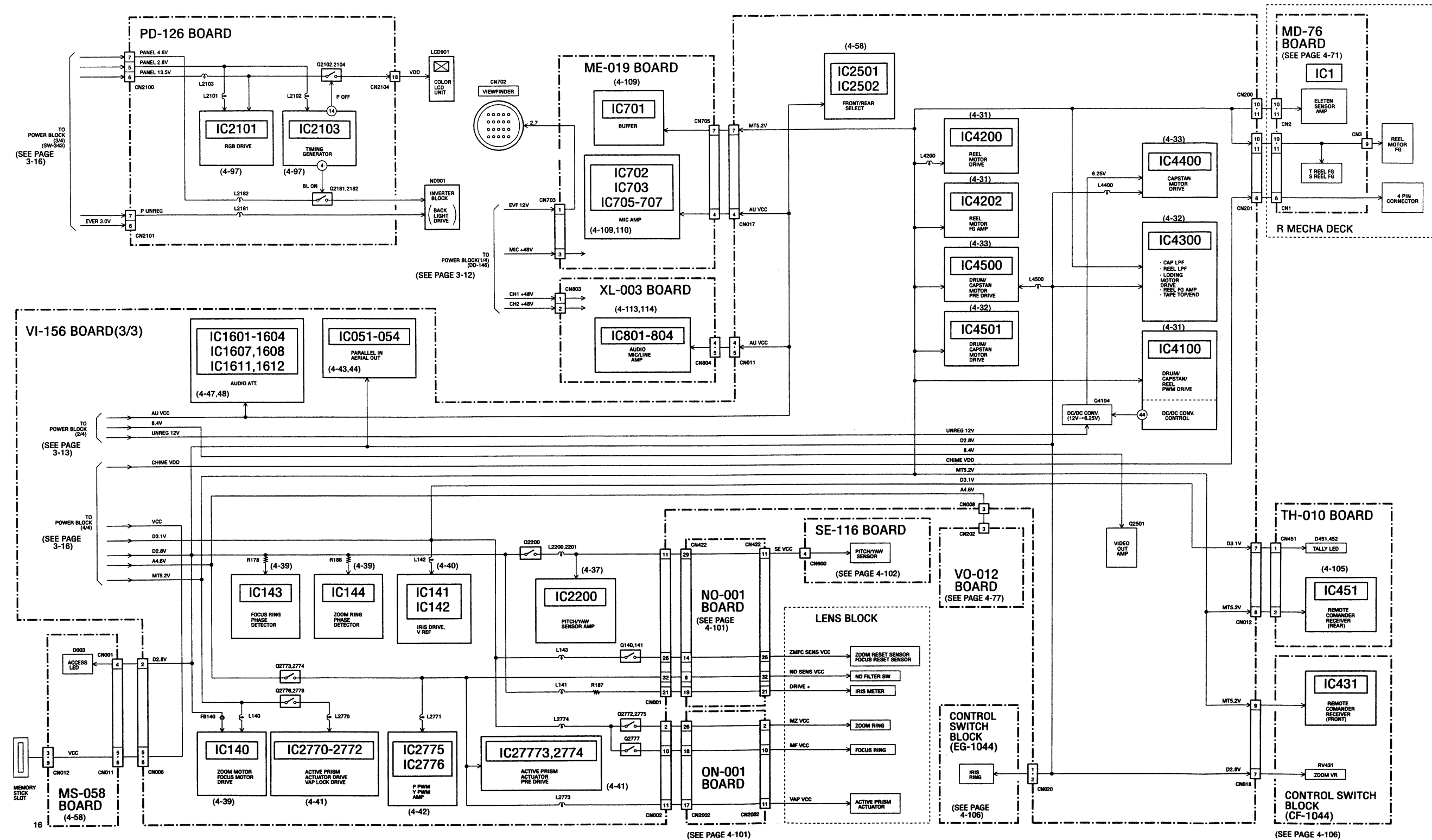


3-8. POWER BLOCK DIAGRAM (3/4)

() : Page No. shown in () indicates the page to refer on the schematic diagram.



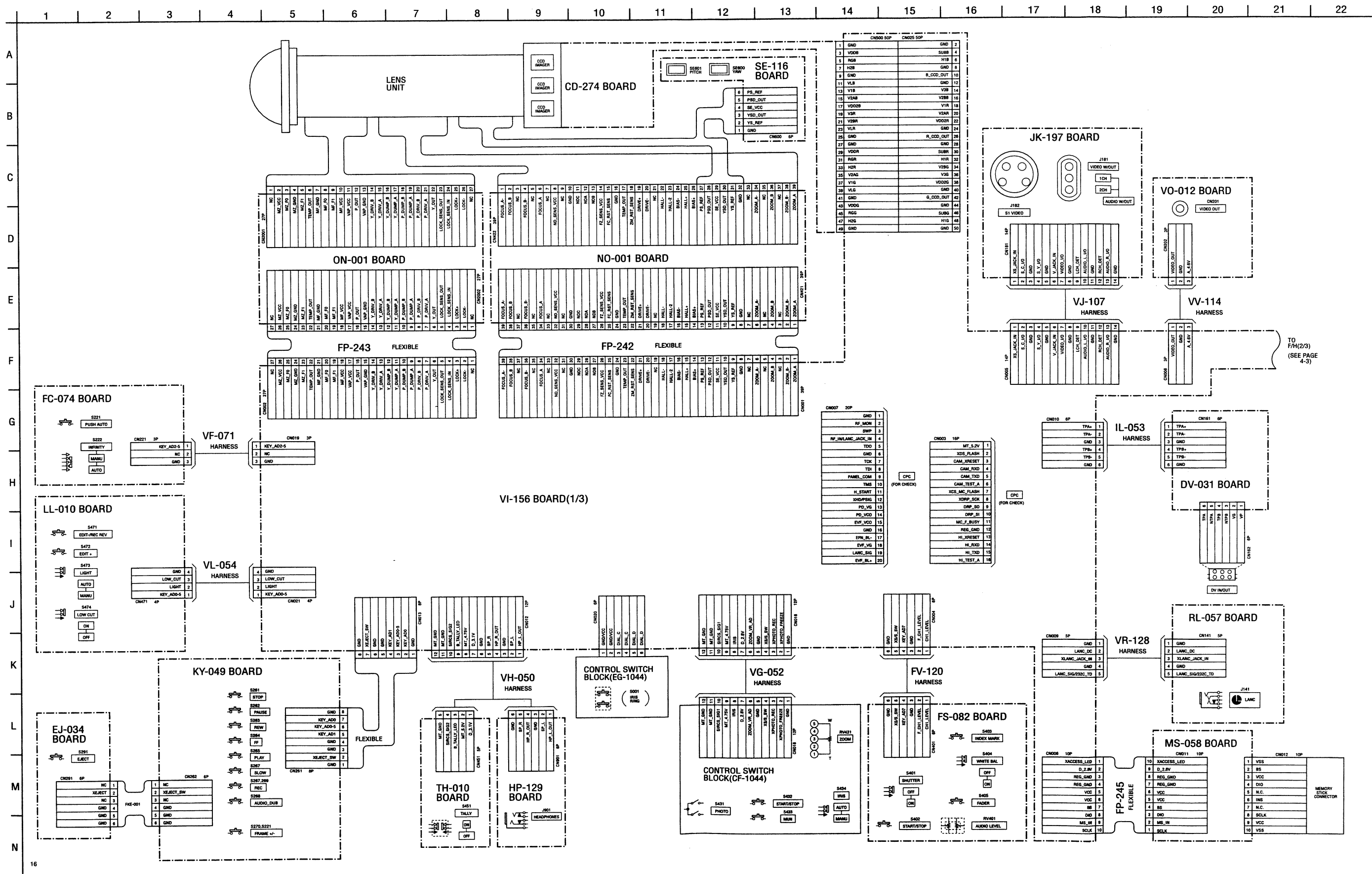
3-9. POWER BLOCK DIAGRAM (4/4) () : Page No. shown in () indicates the page to refer on the schematic diagram.



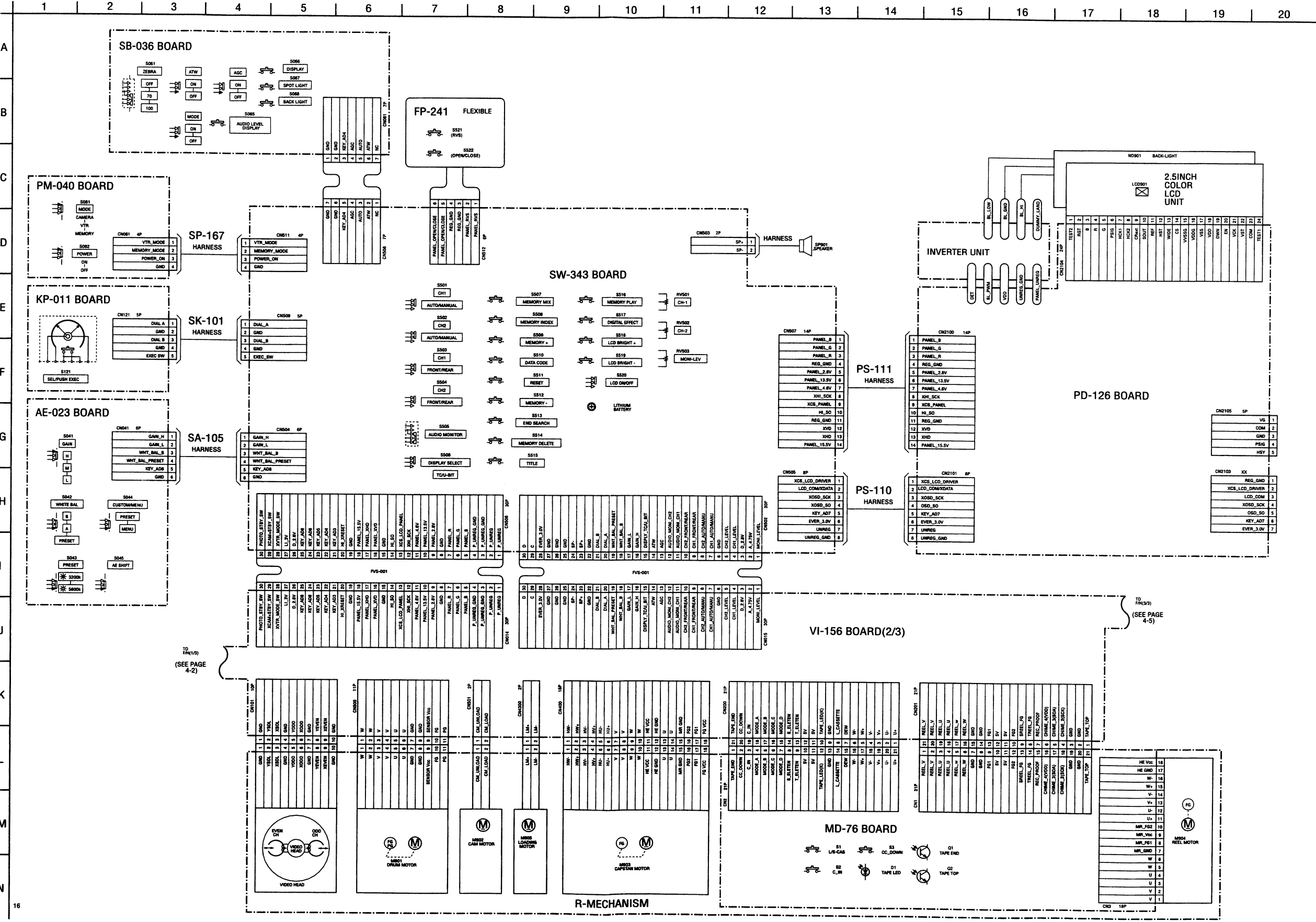
SECTION 4

PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

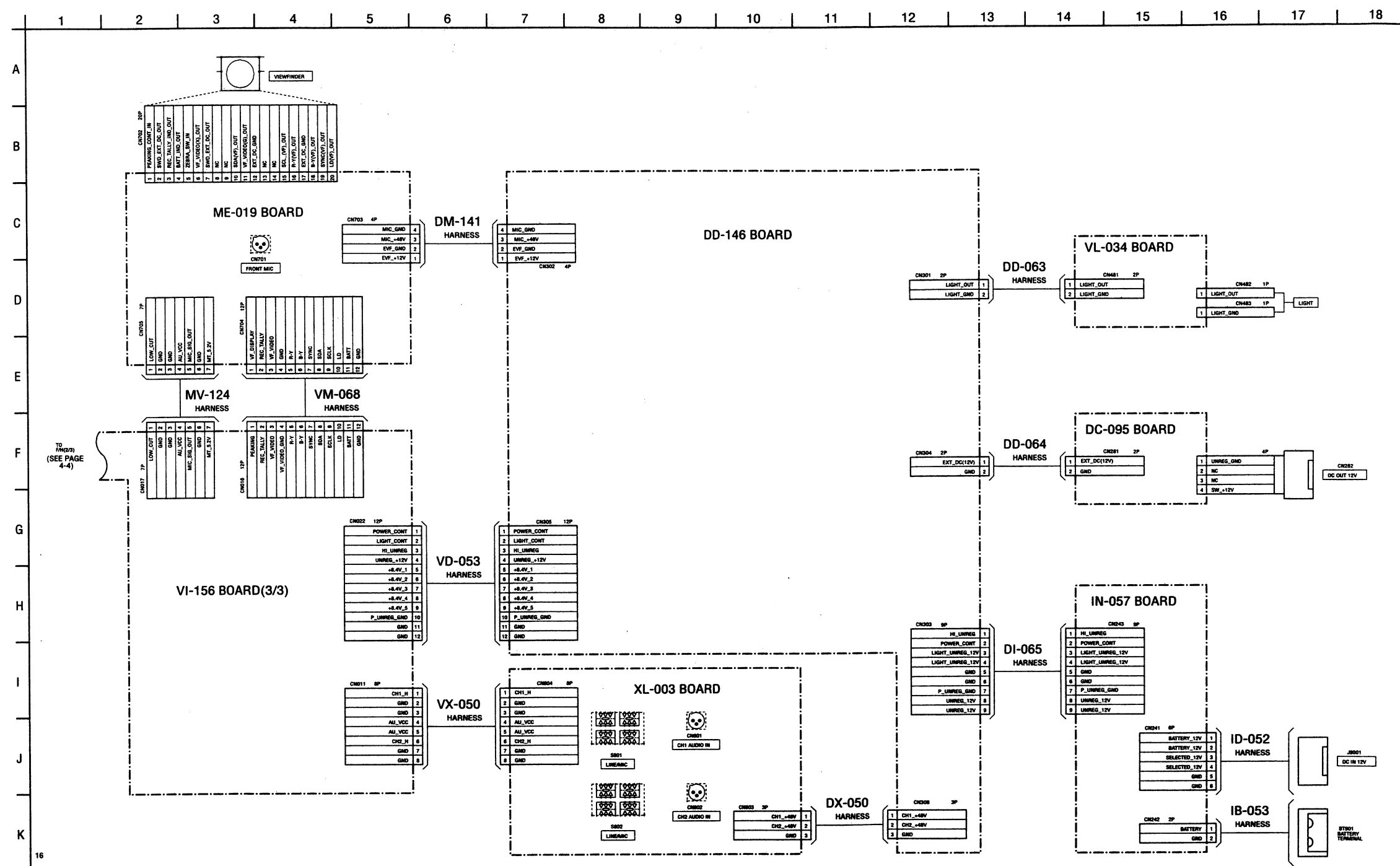
4-1. FRAME SCHEMATIC DIAGRAM (1/3)



FRAME SCHEMATIC DIAGRAM (2/3)



FRAME SCHEMATIC DIAGRAM (3/3)

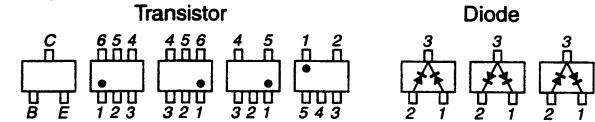


4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR WIRING BOARDS AND SCHEMATIC DIAGRAMS
(In addition to this, the necessary note is printed in each block)

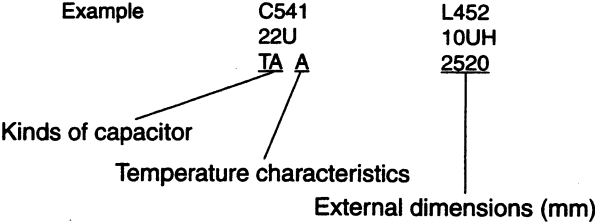
(For printed wiring boards)

- Pattern from the side which enables seeing.
(The other layers' patterns are not indicated.)
- Through hole is omitted.
- Circled numbers refer to waveforms.
- There are few cases that the part printed on diagram isn't mounted in this model.
- Chip parts.



(For schematic diagrams)

- All capacitors are in mF unless otherwise noted. pF : m mF. 50V or less are not indicated except for electrolytics and tantalums.
- Chip resistors are 1/10W unless otherwise noted. kW=1000W, MW=1000kW.
- Caution when replacing chip parts.
New parts must be attached after removal of chip.
Be careful not to heat the minus side of tantalum capacitor, Because it is damaged by the heat.
- Some chip part will be indicated as follows.



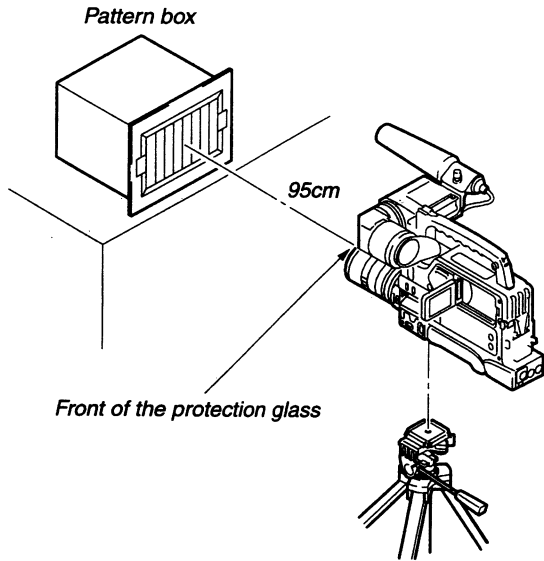
- Constants of resistors, capacitors, ICs and etc with XX indicate that they are not used.
In such cases, the unused circuits may be indicated.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
XEDIT → EDIT PB/XREC → PB/REC
- non flammable resistor
- fusible resistor
- panel designation
- B+ Line *
- B- Line *
- IN/OUT direction of (+,-) B LINE. *
- adjustment for repair. *
- Circled numbers refer to waveforms. *
- Indicated by the color red.

Note : The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.	Note : Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.
--	--

(Measuring conditions voltage and waveform)

- Voltages and waveforms are measured between the measurement points and ground when camera shoots color bar chart of pattern box. They are reference values and reference waveforms. *
- (VOM of DC 10 MΩ input impedance is used.).
- Voltage values change depending upon input impedance of VOM used.) *

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

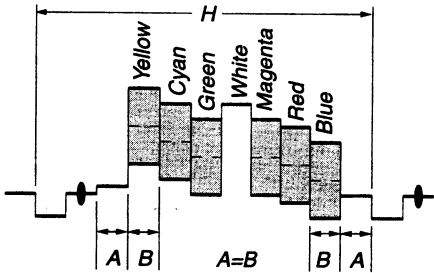


Fig. a (Video output terminal output waveform)

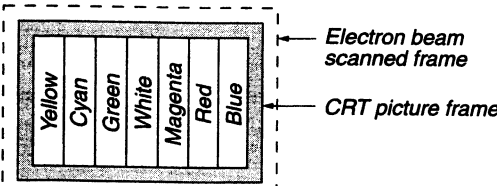
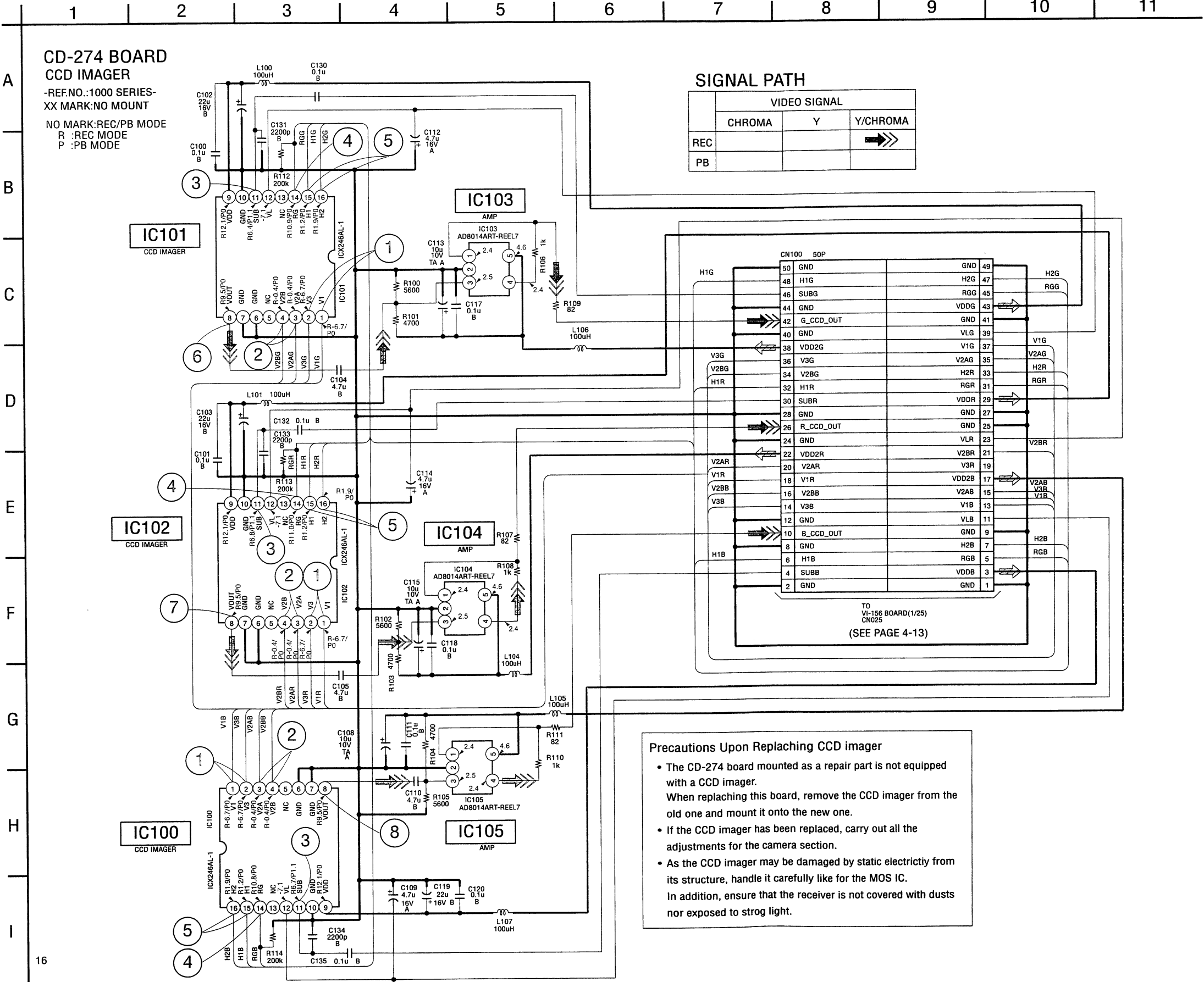


Fig.b (Picture on monitor TV)

When indicating parts by reference number, pleas include the board name.

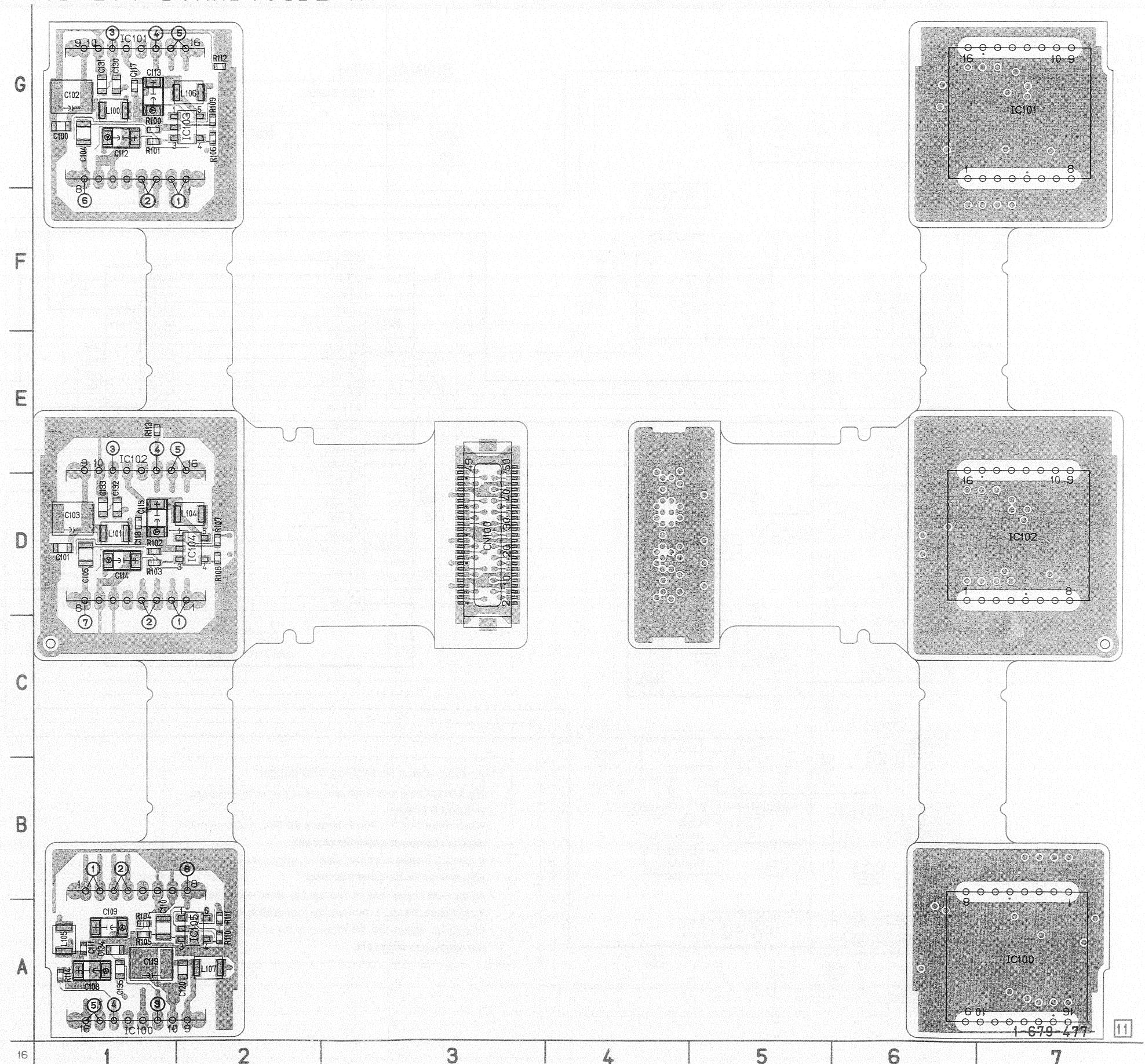
For Schematic Diagram

- Refer to page 4-11 for printed wiring board.
- Refer to page 4-121 for waveforms.



— Ref. No. CD-274 Board; 1,000 Series —

CD-274 BOARD (SIDE B)

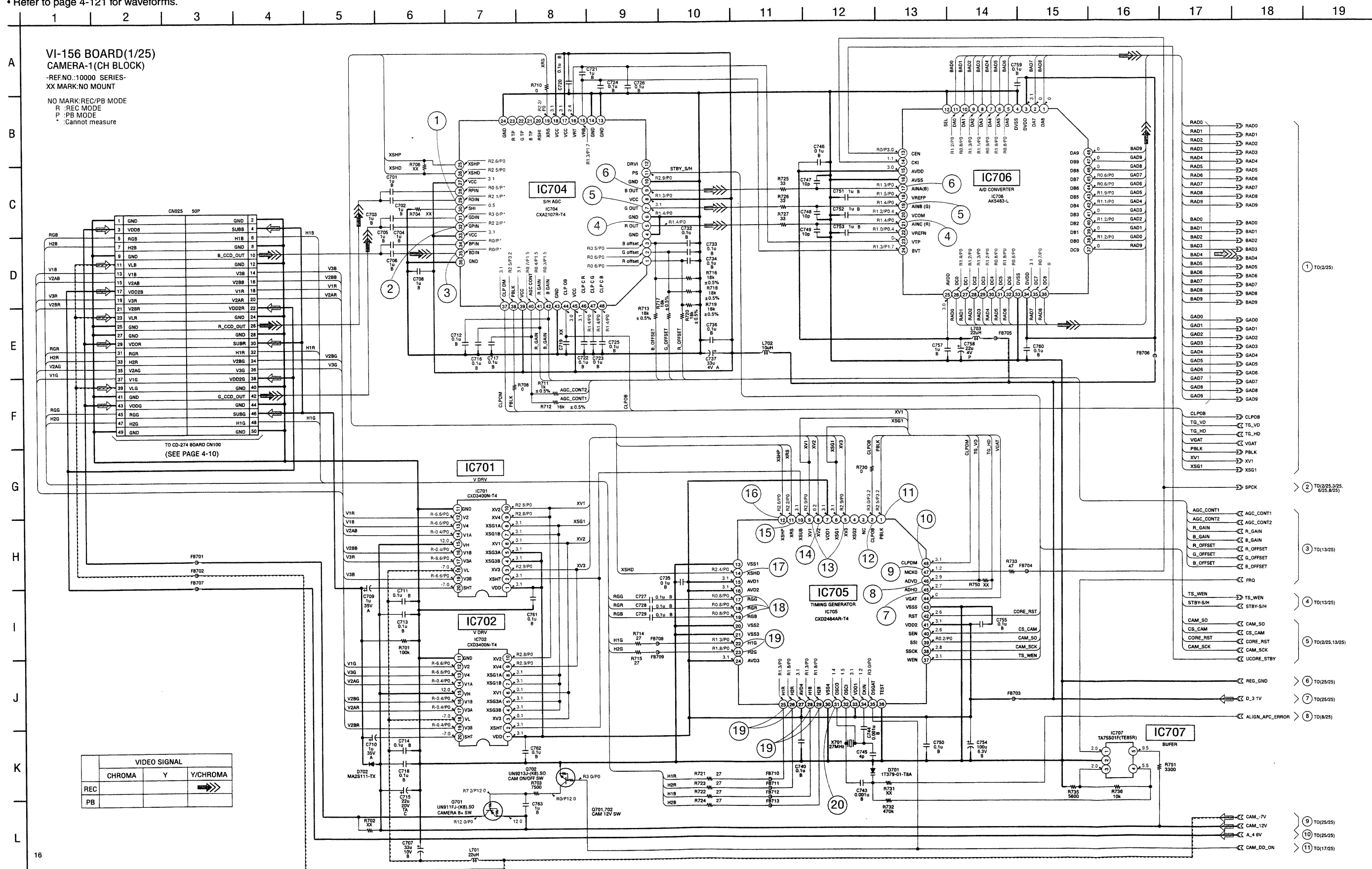


- Refer to page 4-125 for parts location.
- CD-274 board consists of multiple layers. However, only the sides (layers) A and B are shown.

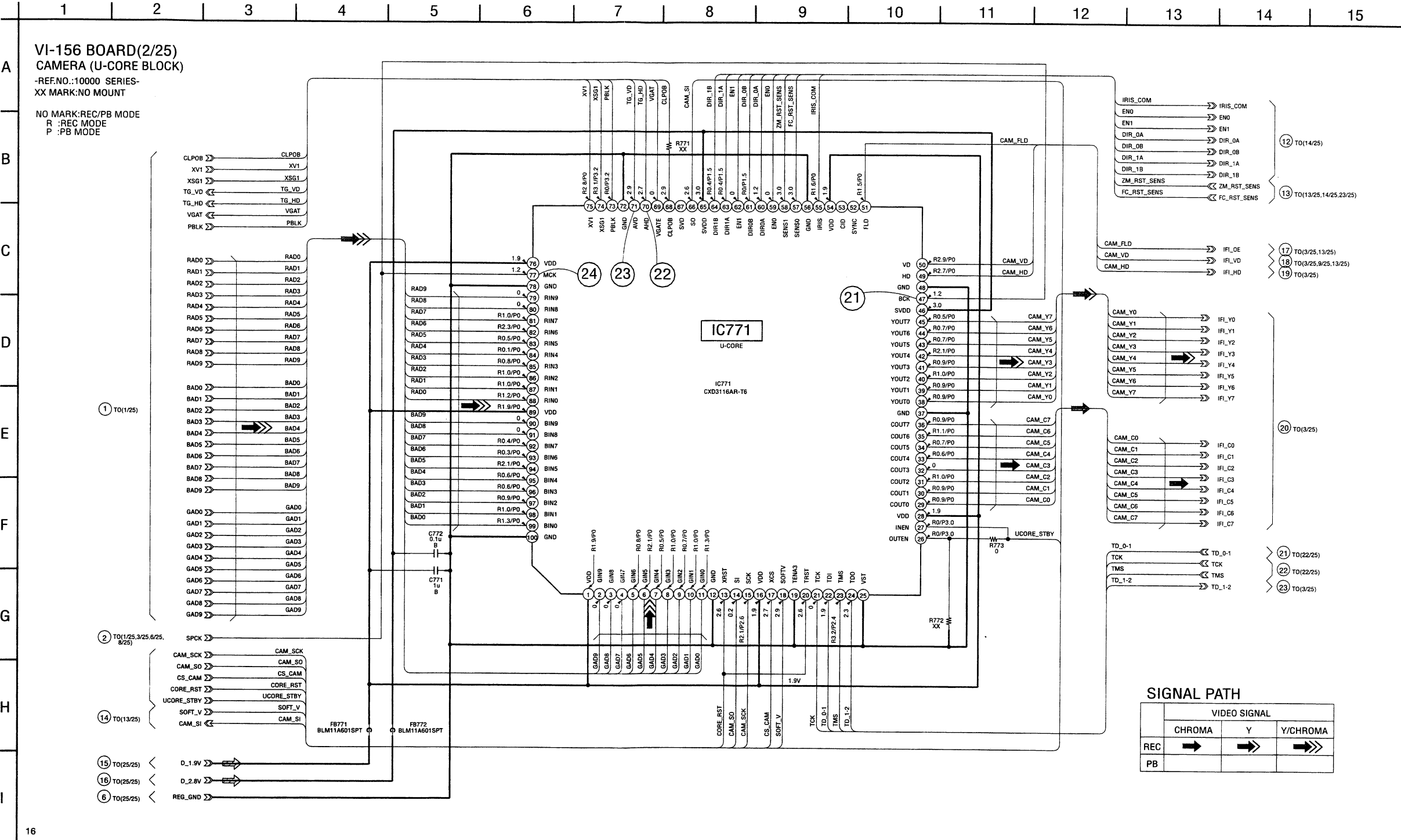
There are few cases that the part printed on this diagram isn't mounted in this model.

For Schematic Diagram

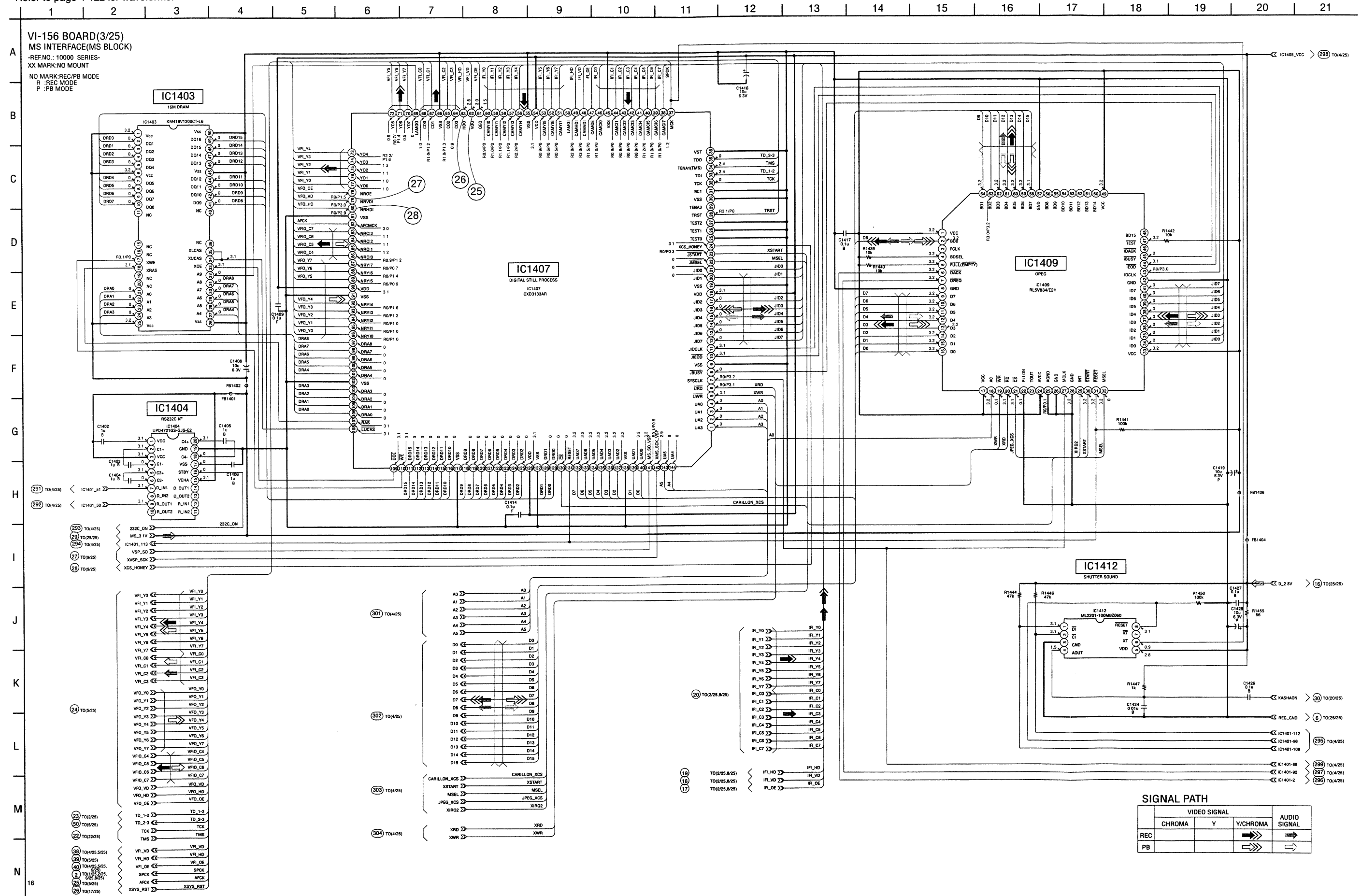
- Refer to page 4-63 for printed wiring board.
- Refer to page 4-121 for waveforms.



For Schematic Diagram
• Refer to page 4-63 for printed wiring board.
• Refer to page 4-122 for waveforms.



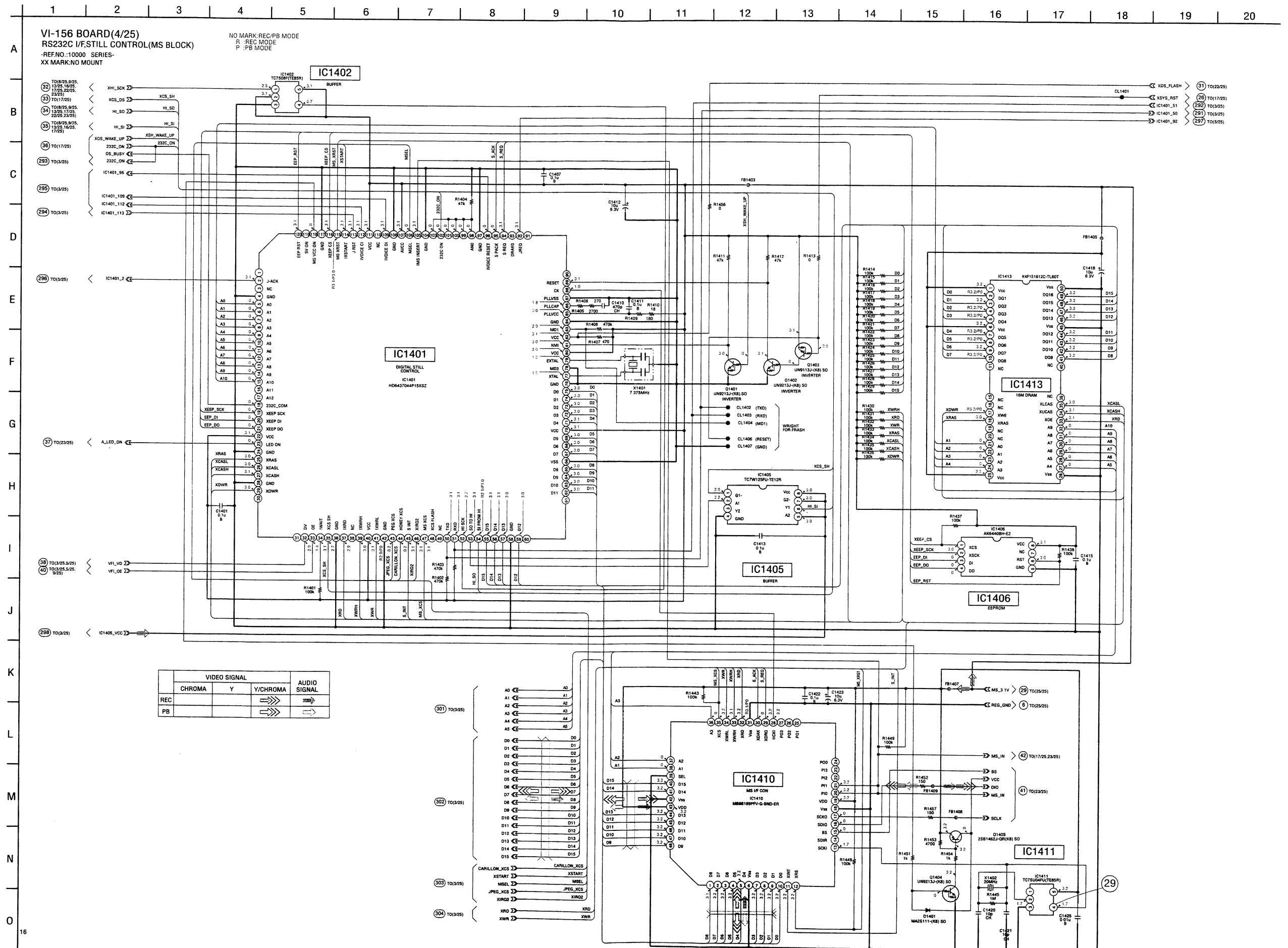
- Refer to page 4-63 for printed wiring board.
- Refer to page 4-122 for waveforms.



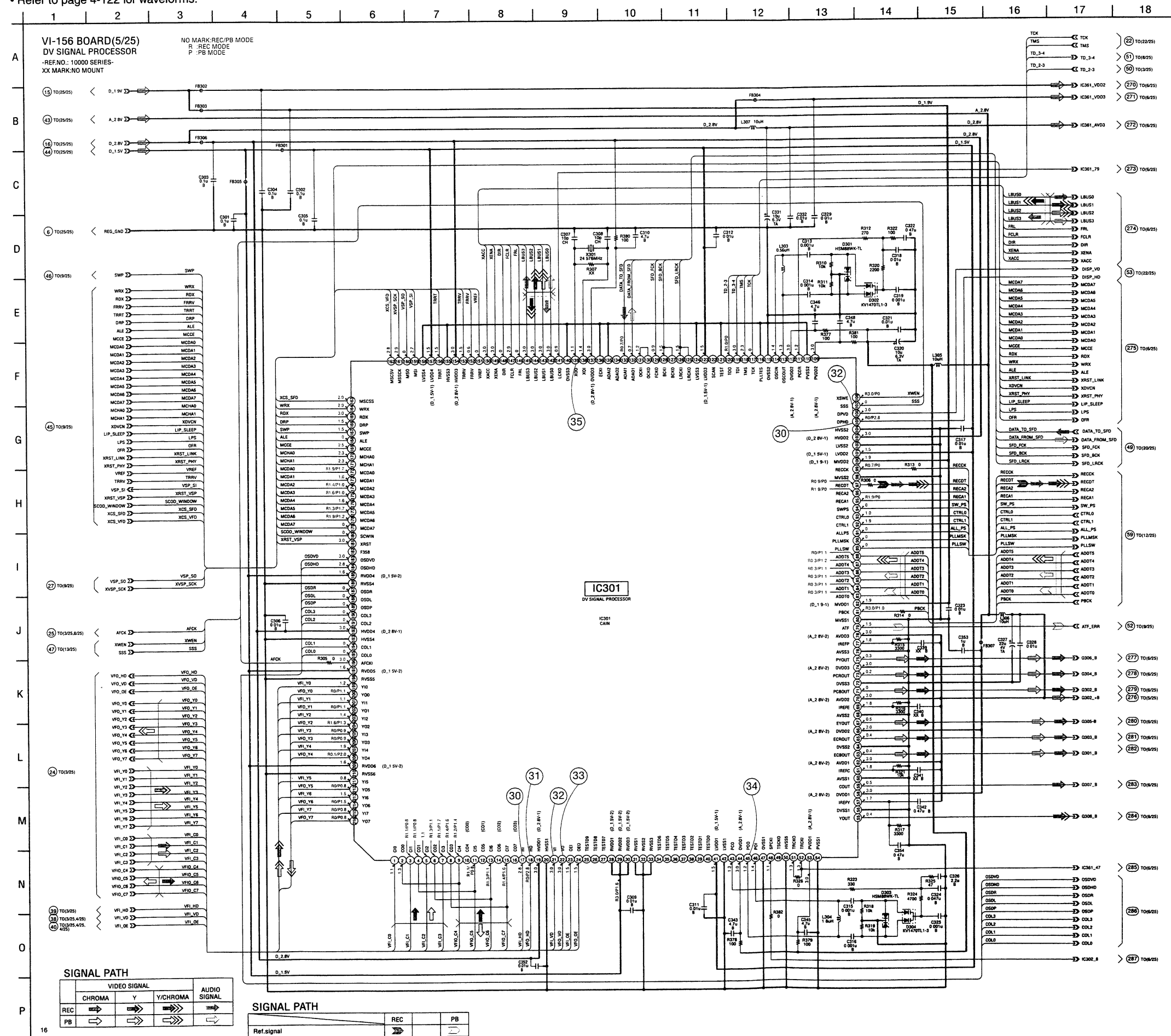
SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB				

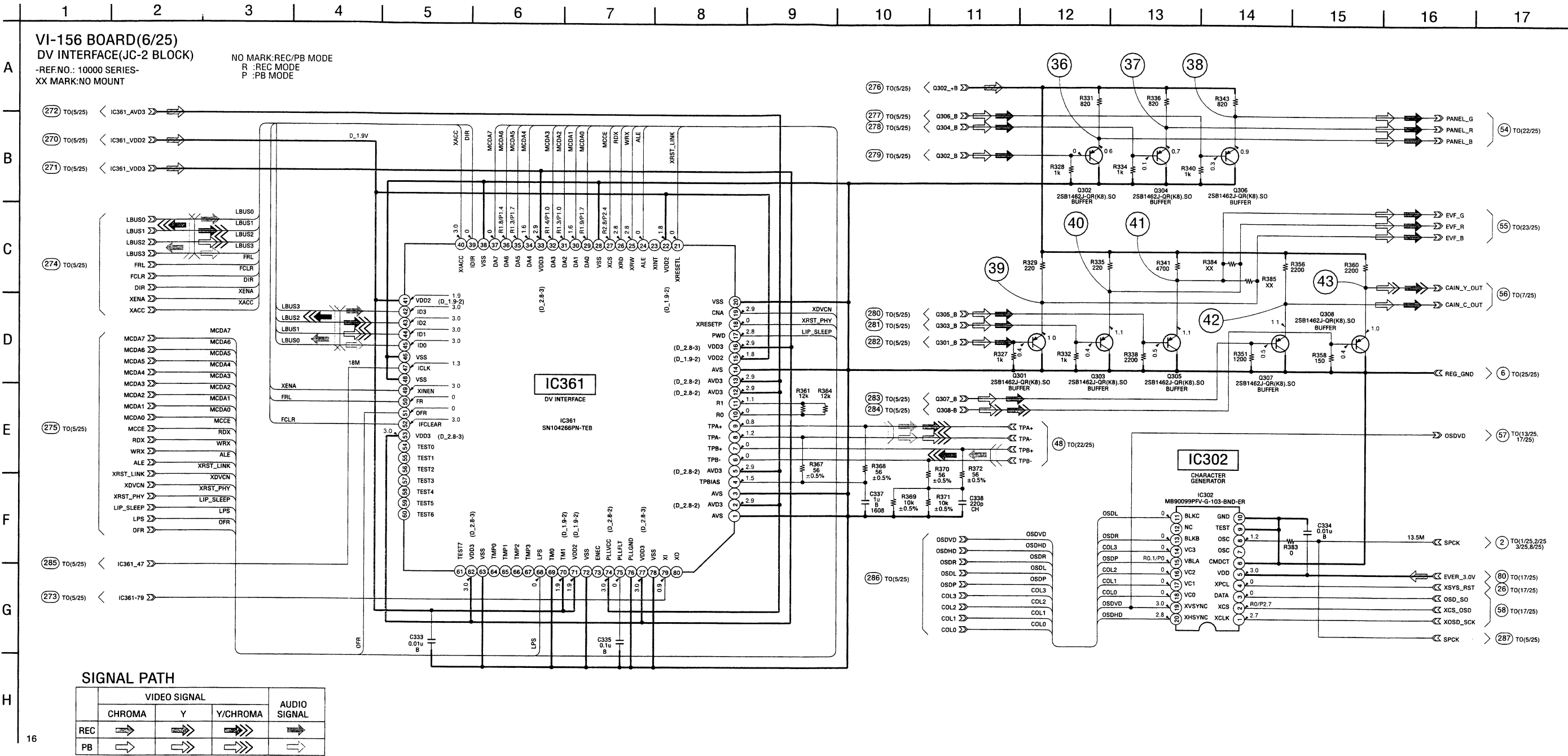
- Refer to page 4-63 for printed wiring board.
- Refer to page 4-122 for waveform.



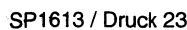
- Refer to page 4-63 for printed wiring board.
- Refer to page 4-122 for waveforms.



For Schematic Diagram
• Refer to page 4-63 for printed wiring board.
• Refer to page 4-122 for waveform.

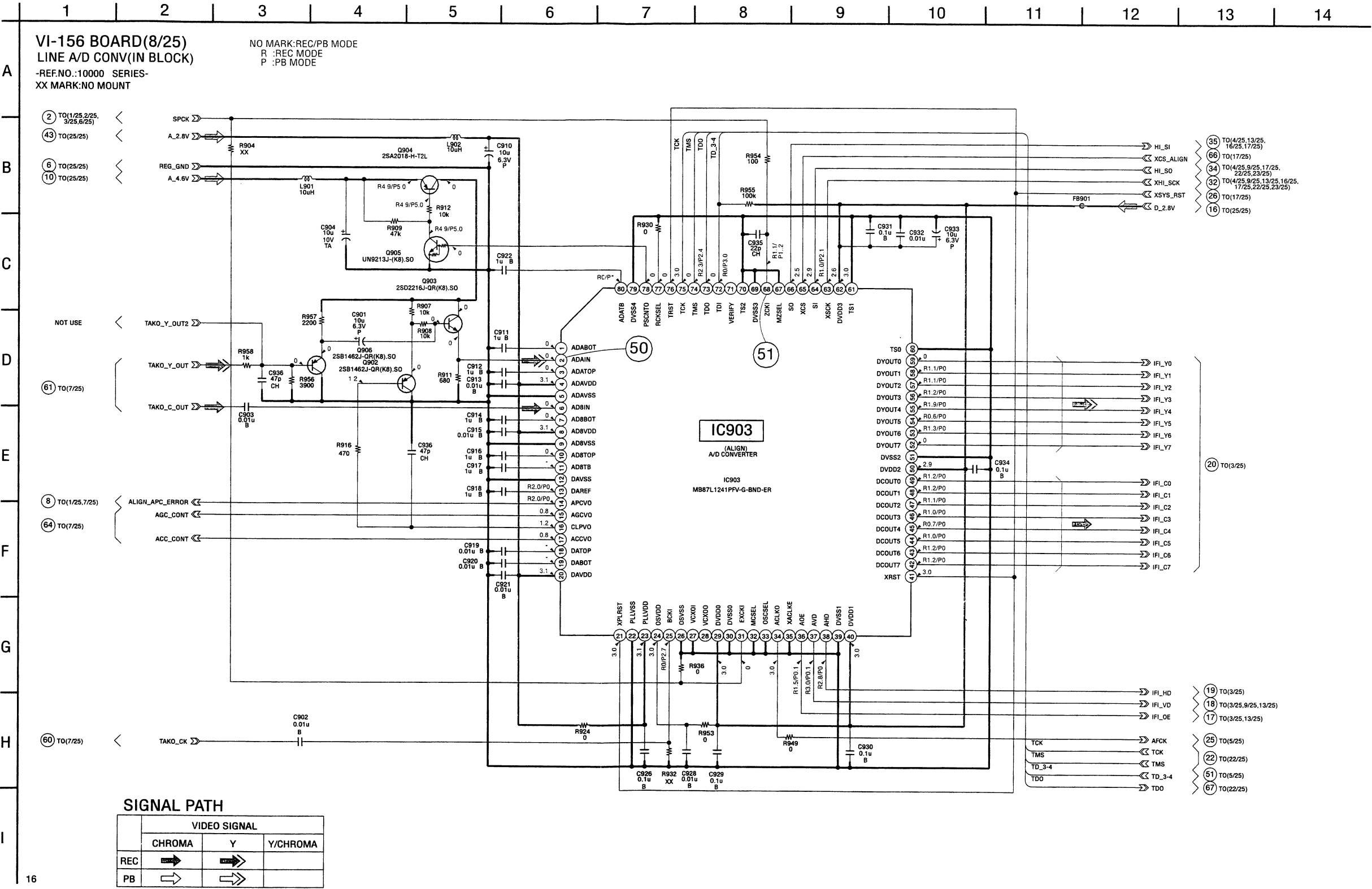


- Refer to page 4-63 for printed wiring board.
- Refer to page 4-123 for waveforms.



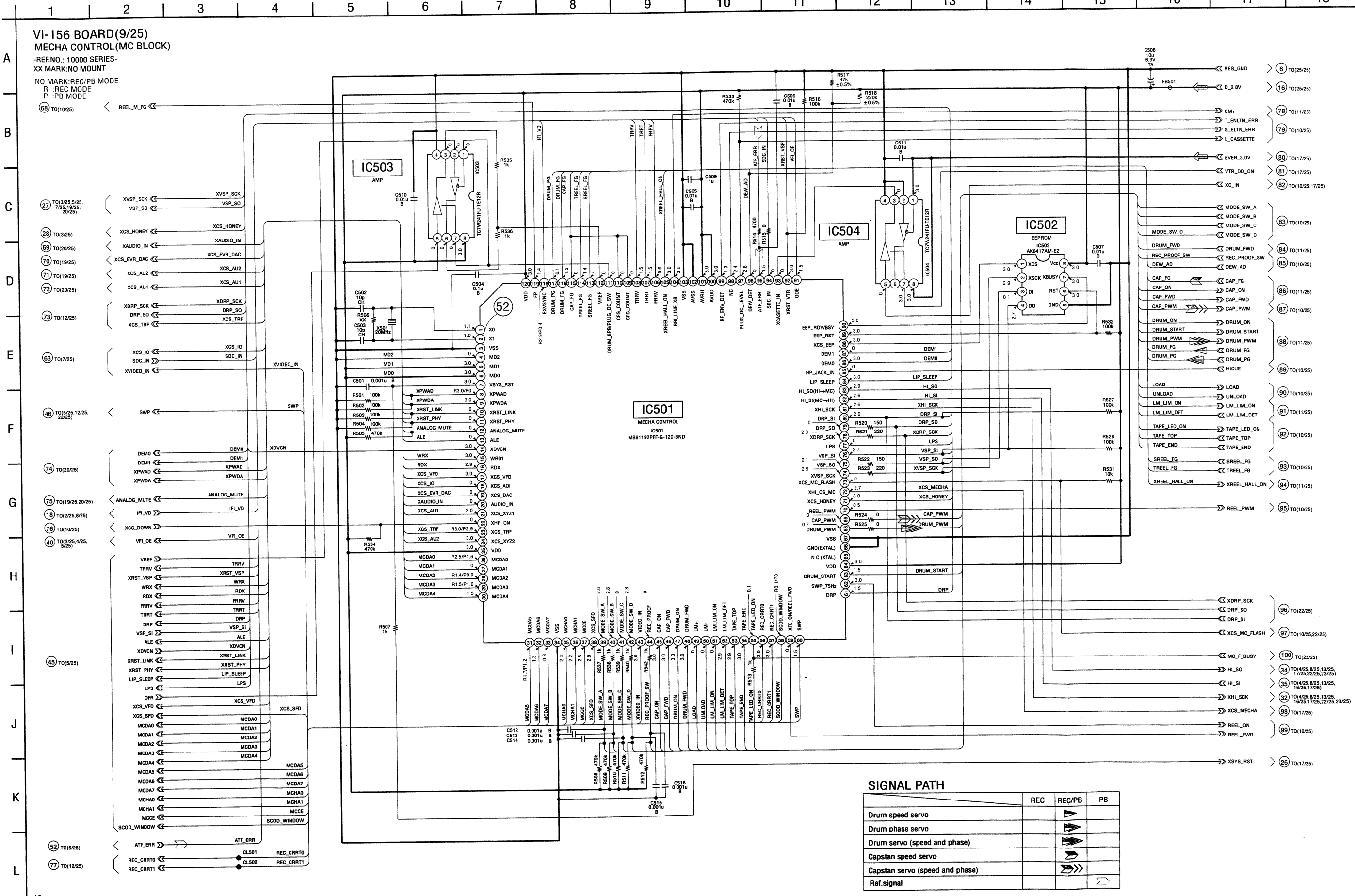
For Schematic Diagram

- Refer to page 4-63 for printed wiring board.
- Refer to page 4-123 for waveforms.

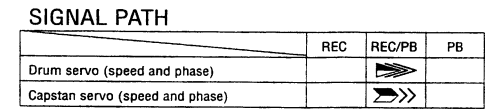


For Schematic Diagram

- Refer to page 4-63 for printed wiring board.
- Refer to page 4-123 for waveform.

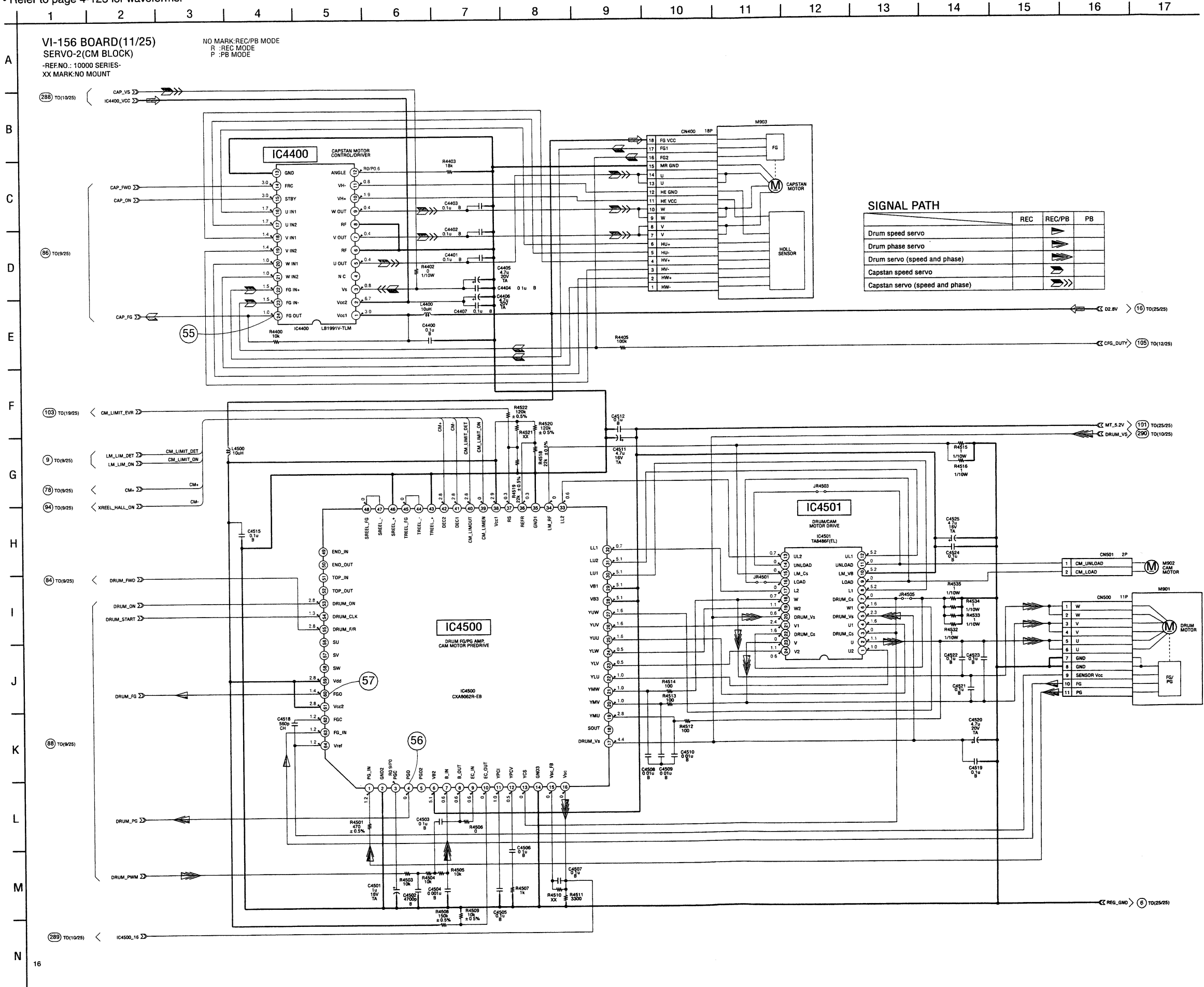


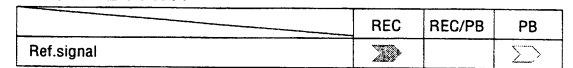
- Refer to page 4-63 for printed wiring board.
- Refer to page 4-123 for waveforms.



For Schematic Diagram

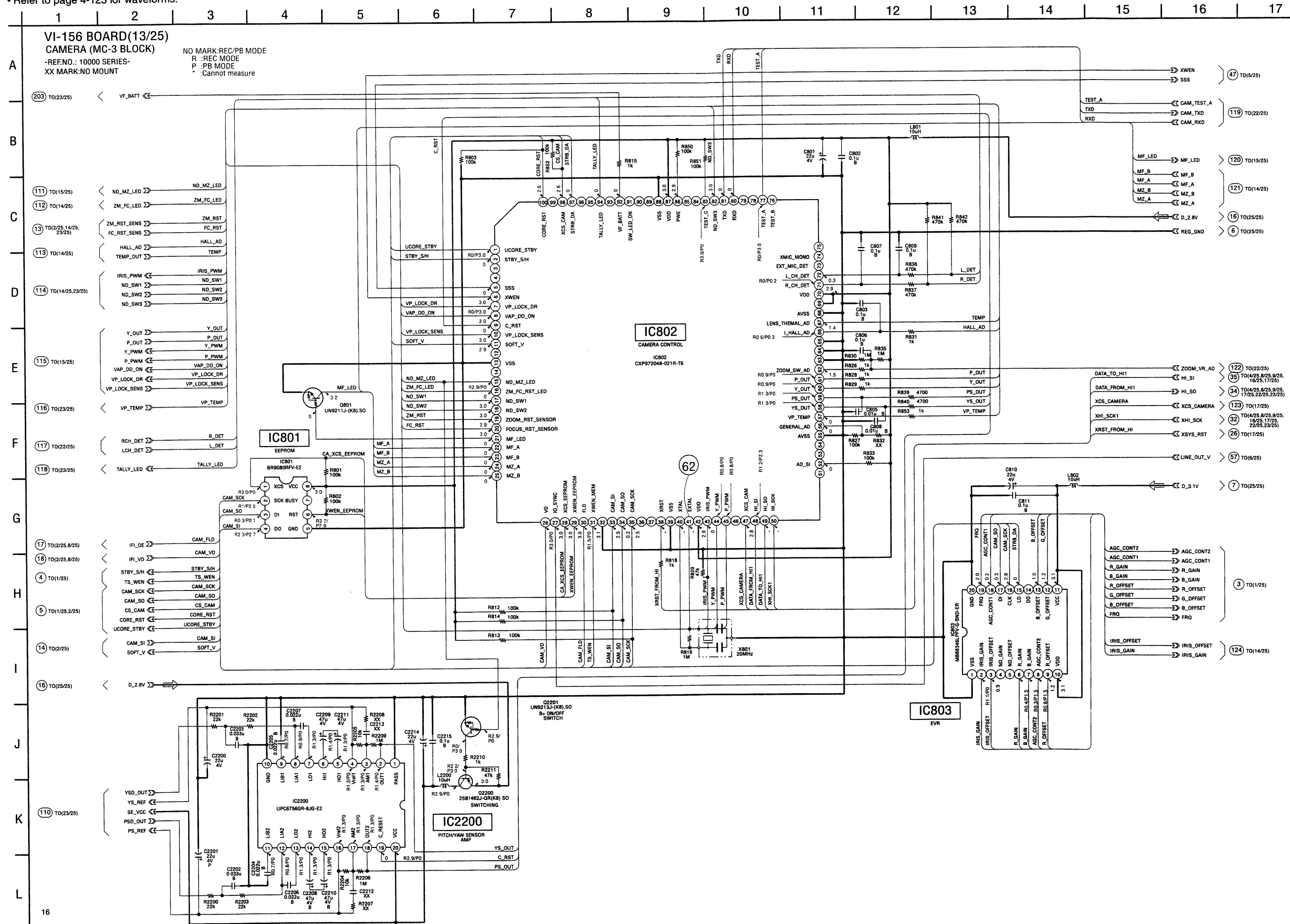
- Refer to page 4-63 for printed wiring board.
- Refer to page 4-123 for waveforms.





For Schematic Diagram

- Refer to page 4-63 for printed wiring board.
- Refer to page 4-123 for waveforms.



- Refer to page 4-63 for printed wiring board.

- Refer to page 4-63 for printed wiring board.

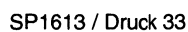




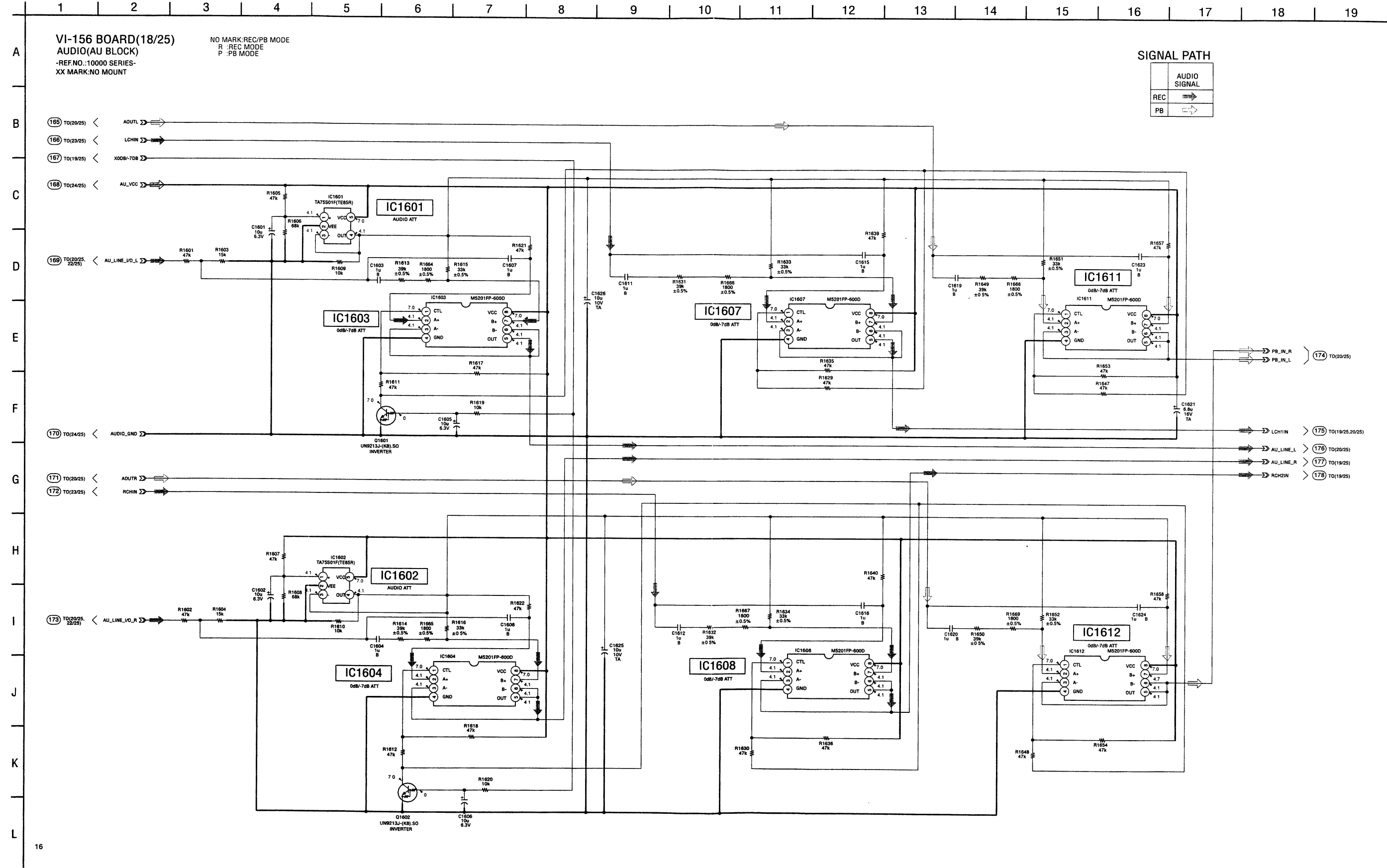
- Refer to page 4-63 for printed wiring board.



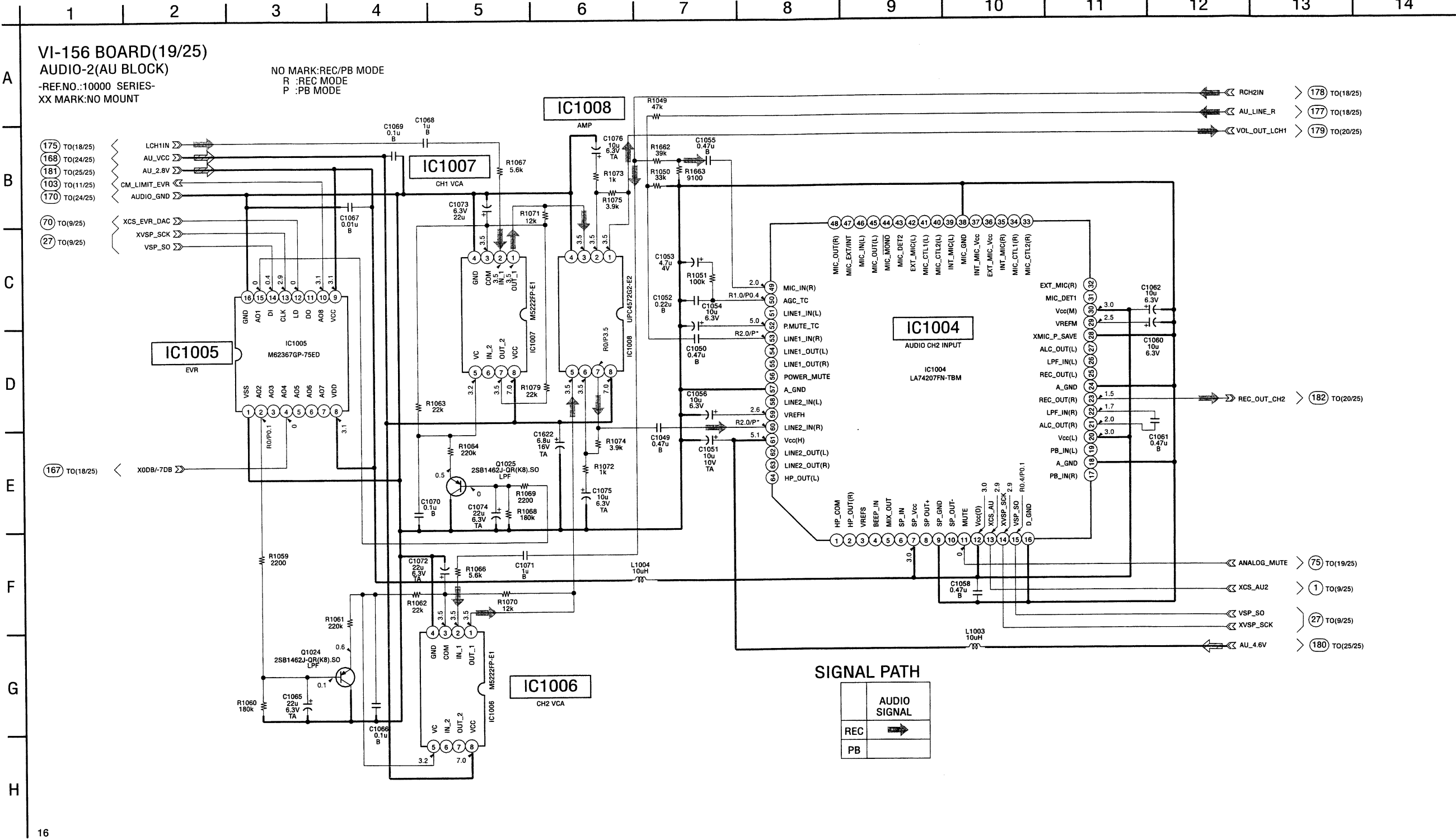
- Refer to page 4-63 for printed wiring board.
- Refer to page 4-123 for waveforms.



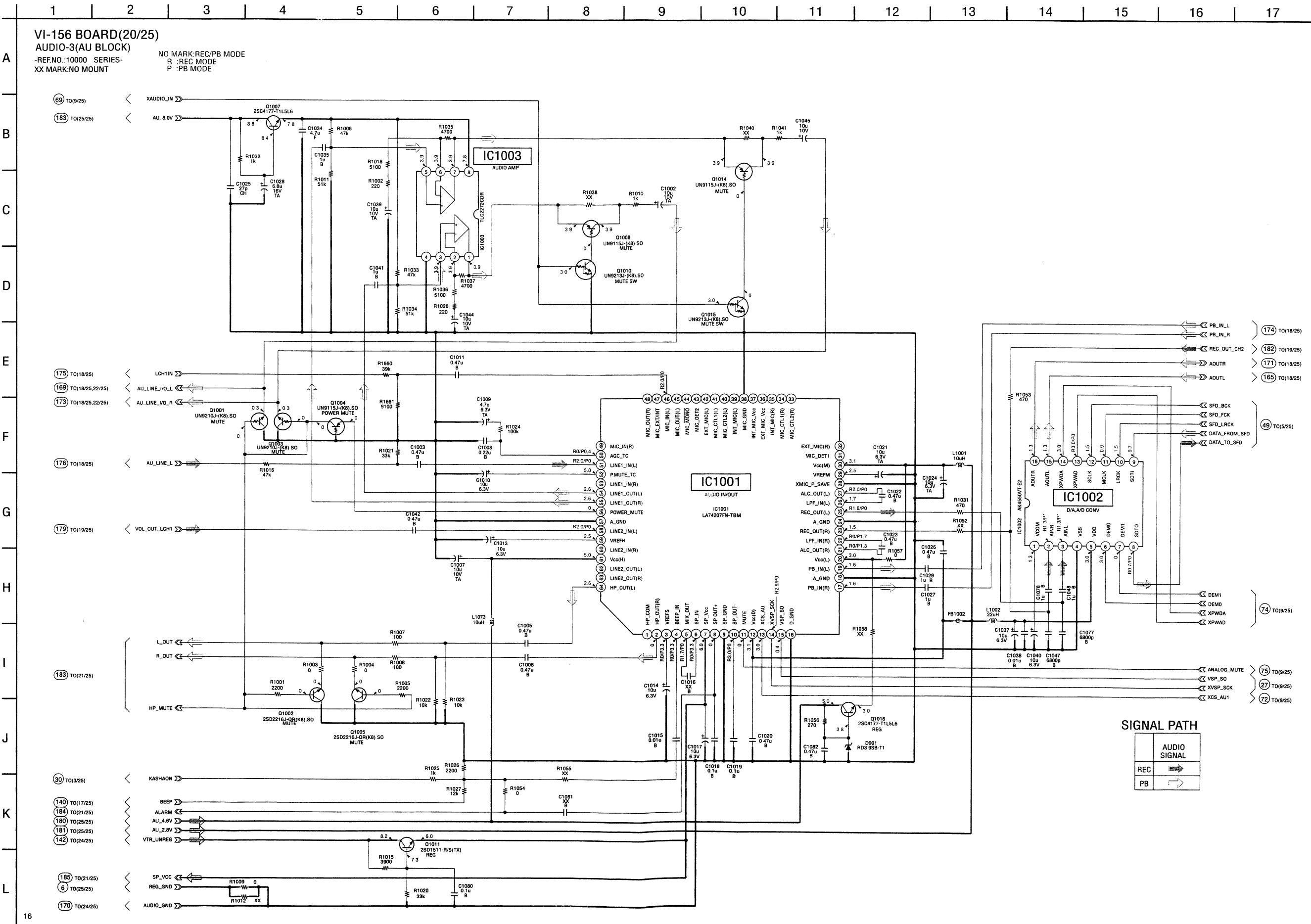
For Schematic Diagram
• Refer to page 4-63 for printed wiring board.



For Schematic Diagram
• Refer to page 4-63 for printed wiring board.



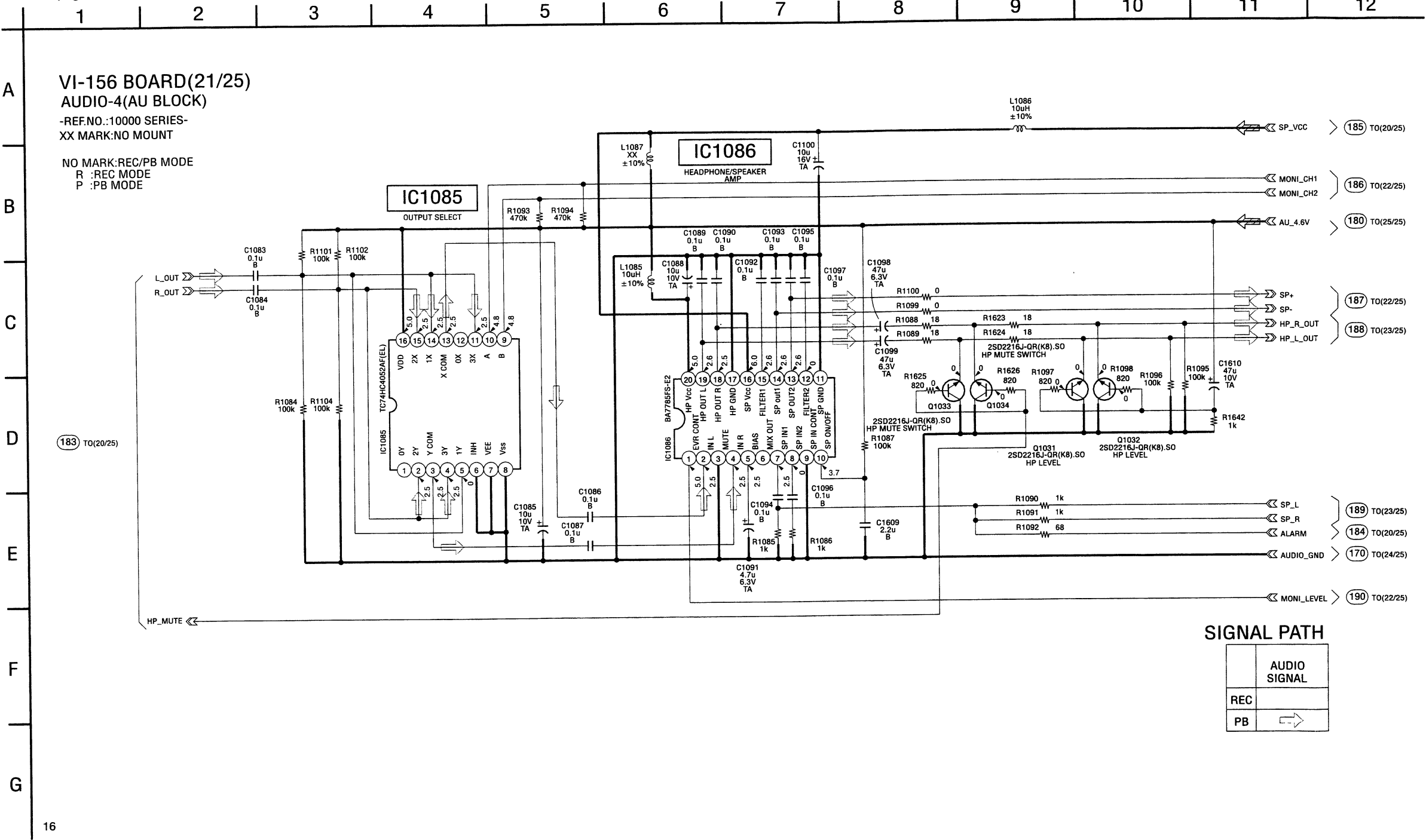
For Schematic Diagram
• Refer to page 4-63 for printed wiring board.



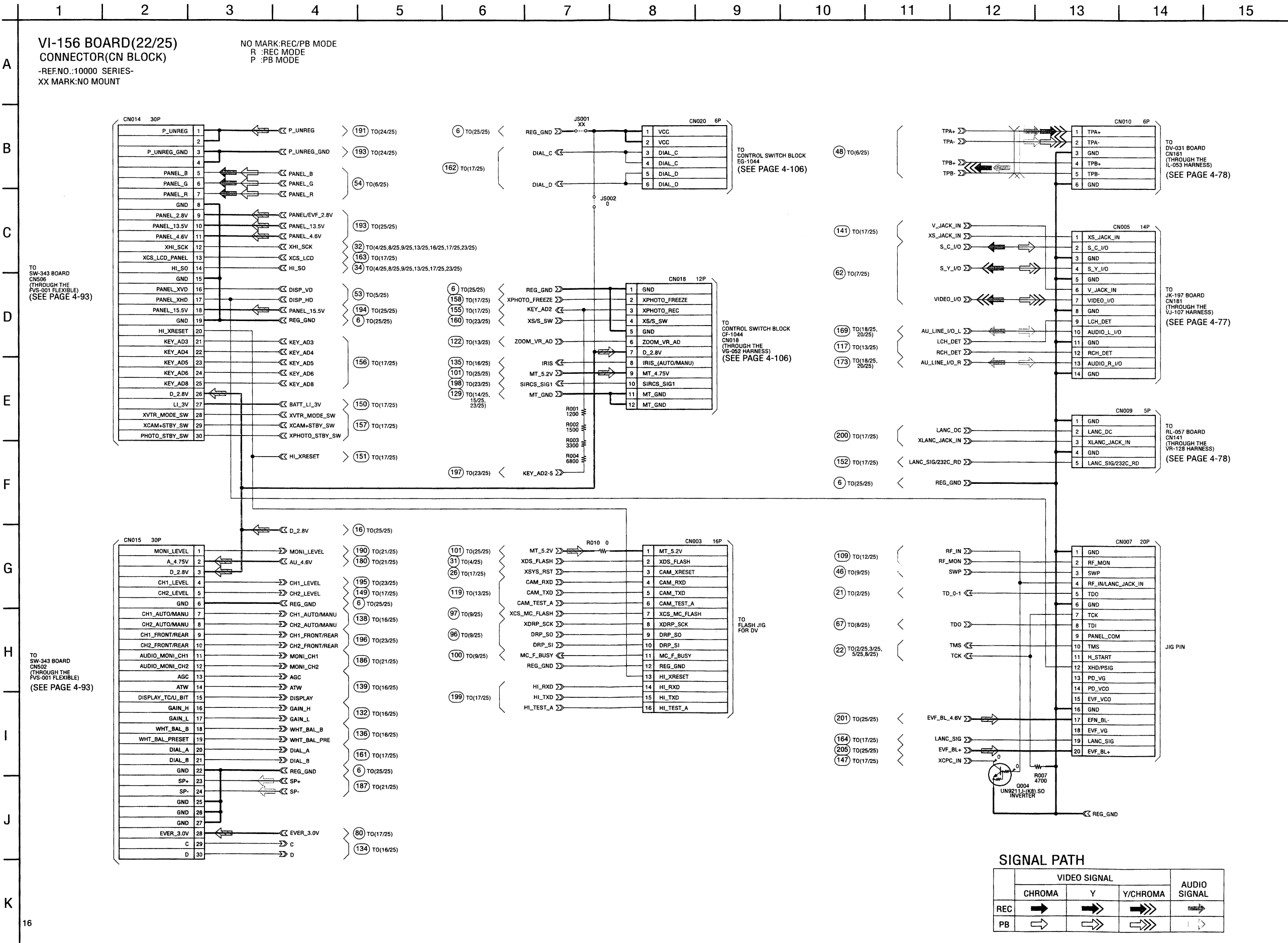
16

For Schematic Diagram

• Refer to page 4-63 for printed wiring board.

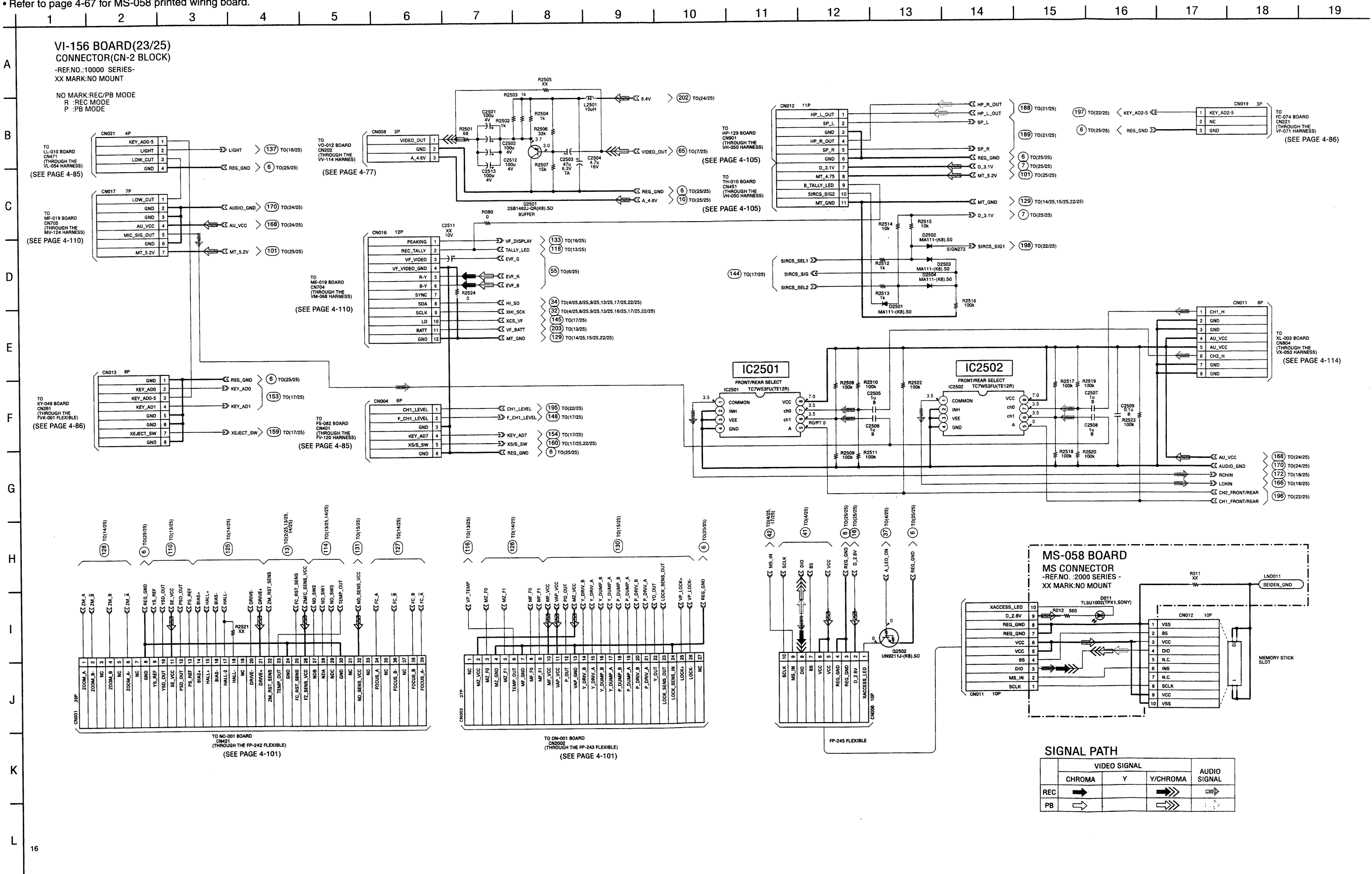


For Schematic Diagram
• Refer to page 4-63 for printed wiring board.

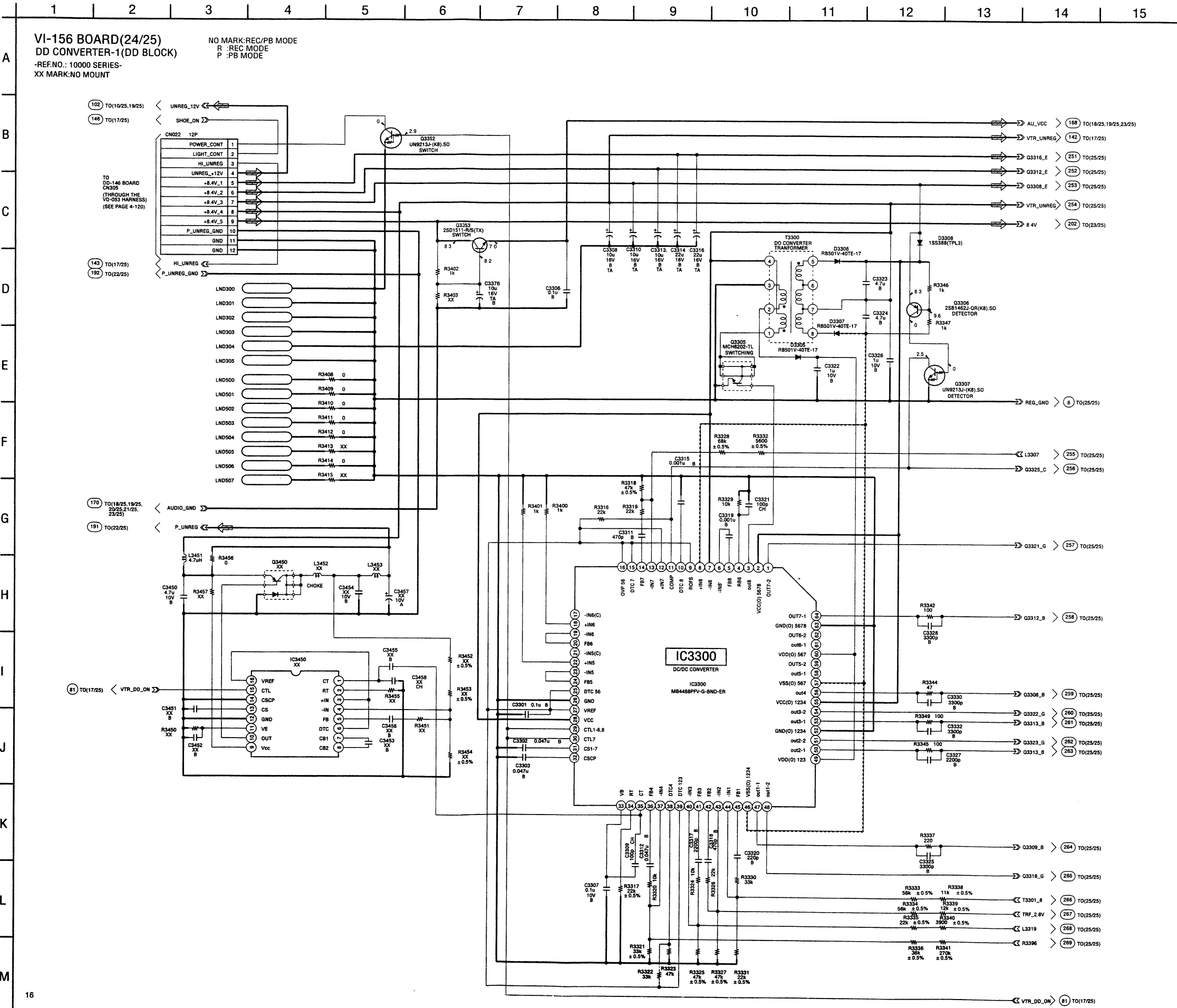


For Schematic Diagram

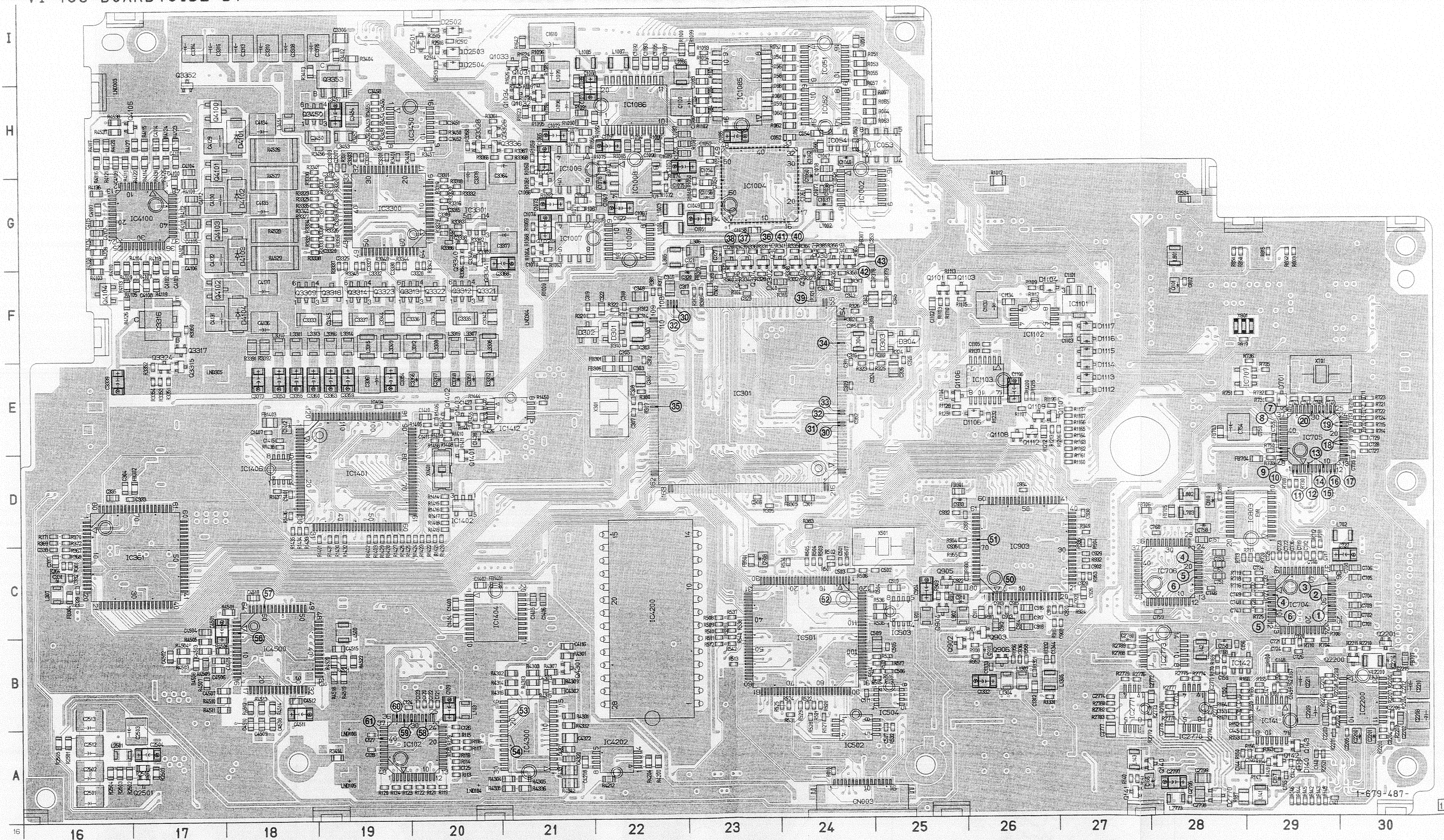
- Refer to page 4-63 for printed wiring board.
- Refer to page 4-67 for MS-058 printed wiring board.



For Schematic Diagram
• Refer to page 4-63 for printed wiring board.

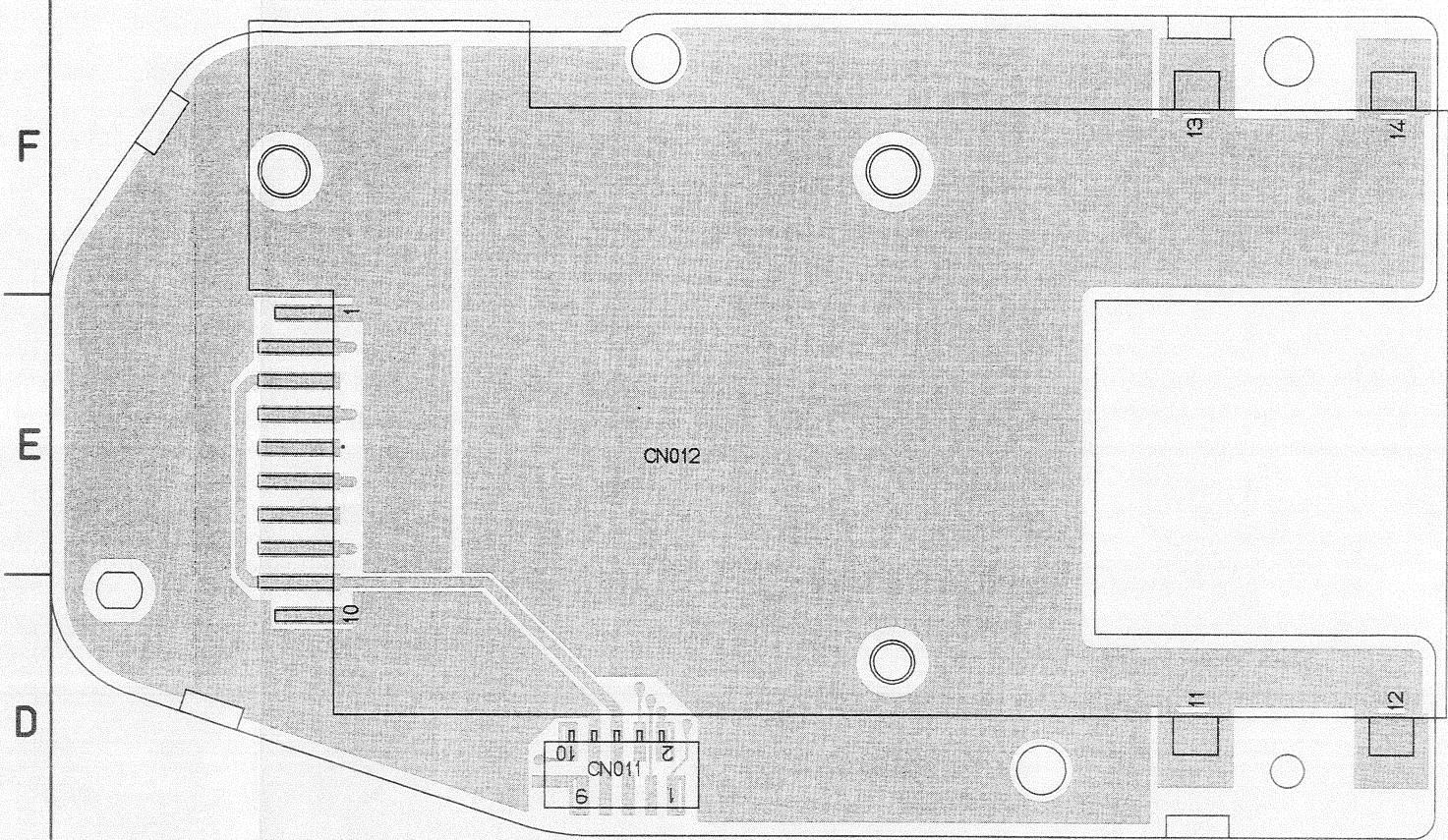


4-64

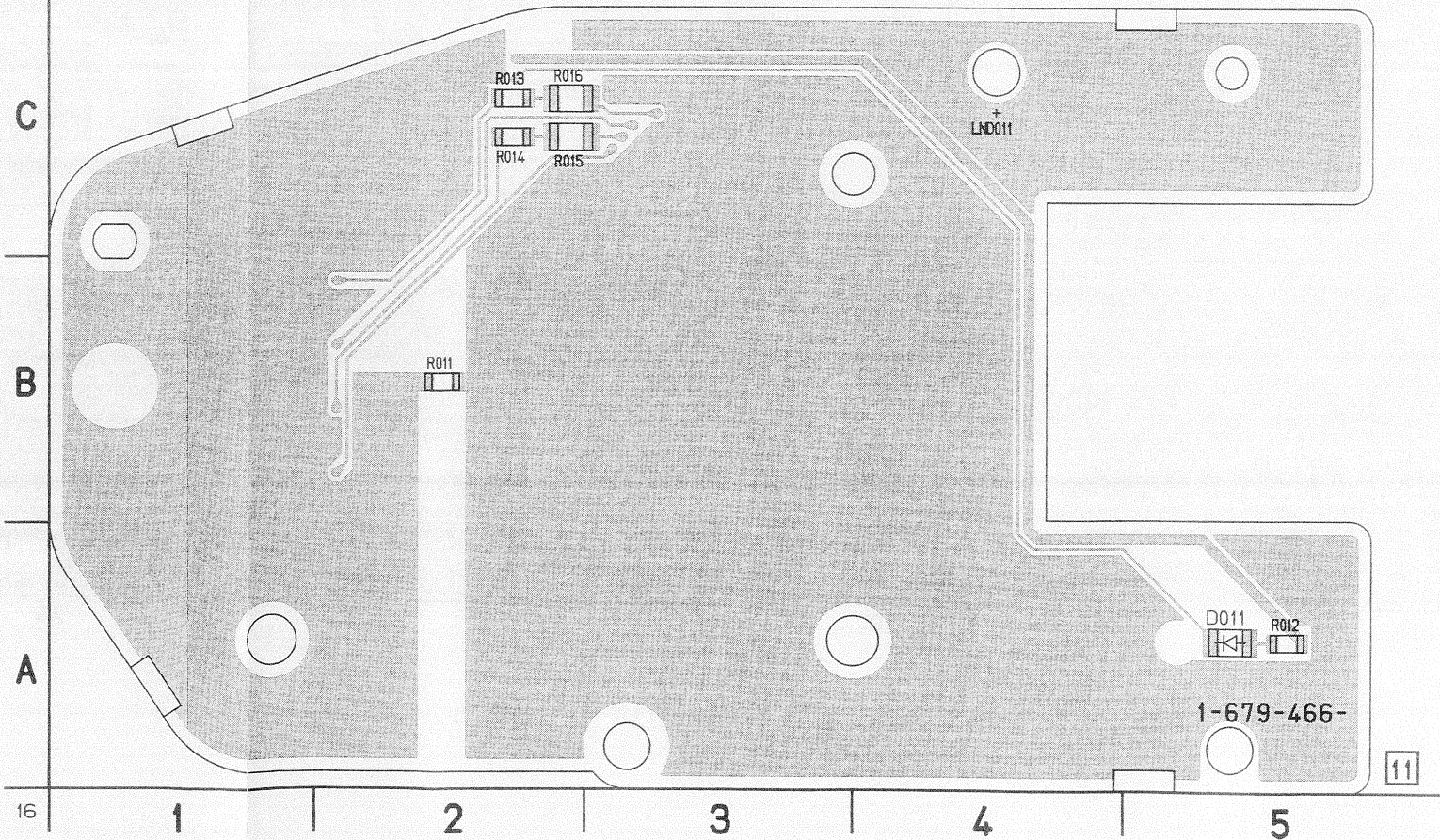


MS-058 (MS CONNECTOR) PRINTED WIRING BOARD
— Ref. No. MS-058 Board; 2,000 Series —

MS-058 BOARD (SIDE A)



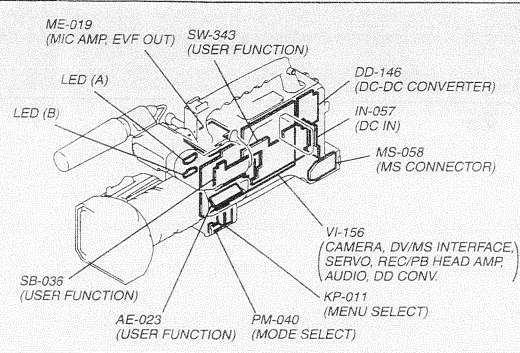
MS-058 BOARD (SIDE B)



For printed wiring board

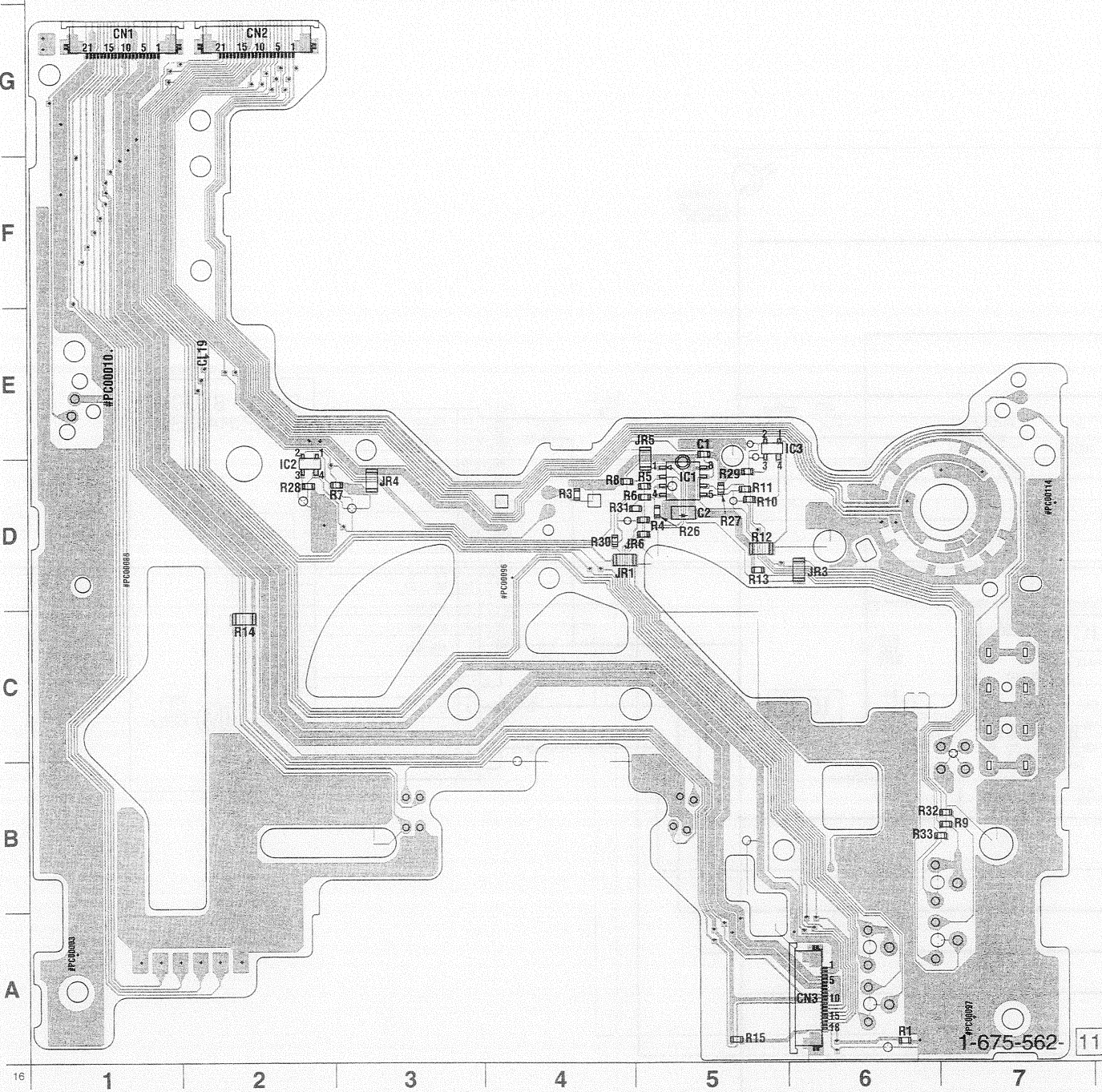
- Refer to page 4-128 for parts location.
- MS-058 board consists of multiple layers. However, only the sides (layers) A and B are shown.

There are few cases that the part printed on this diagram isn't mounted in this model.

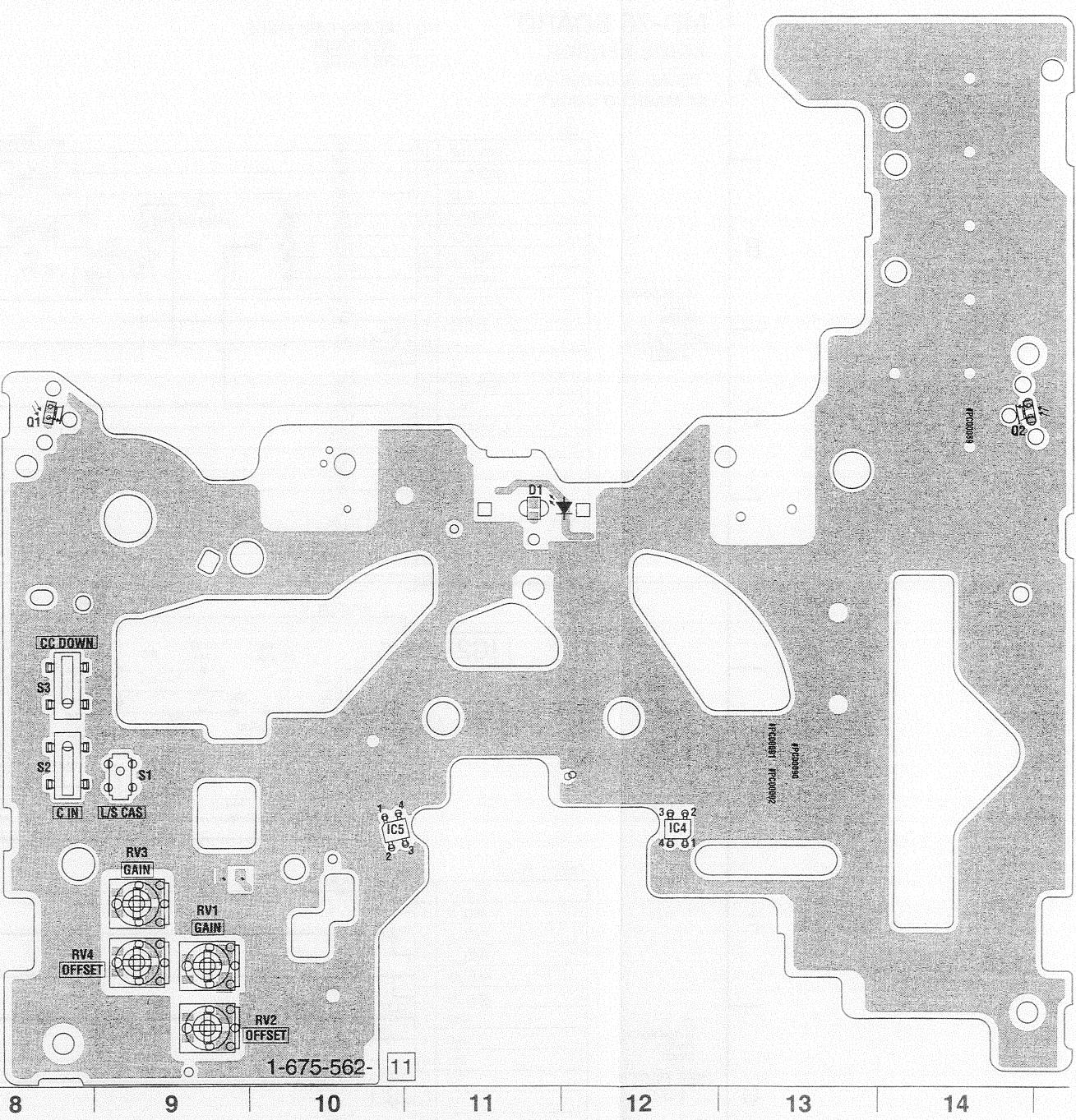


MD-76 (MODE SENSOR) PRINTED WIRING BOARD
— Ref. No. MD-76 Board; 3,000 Series —

MD-76 BOARD (SIDE A)



MD-76 BOARD (SIDE B)

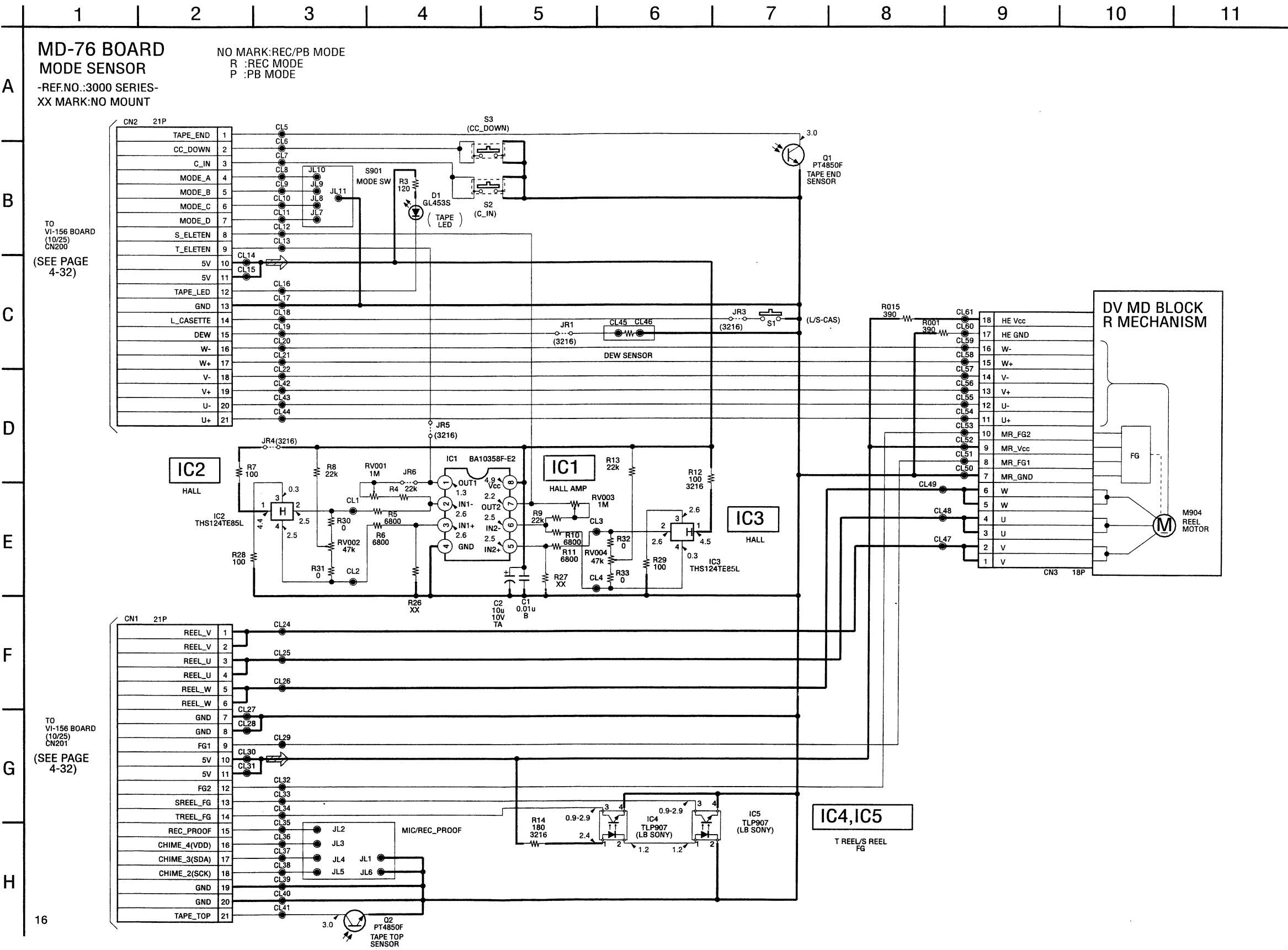


For printed wiring board

- Refer to page 4-128 for parts location.
- MD-76 board consists of multiple layers. However, only the sides (layers) A and B are shown.

There are few cases that the part printed on this diagram isn't mounted in this model.

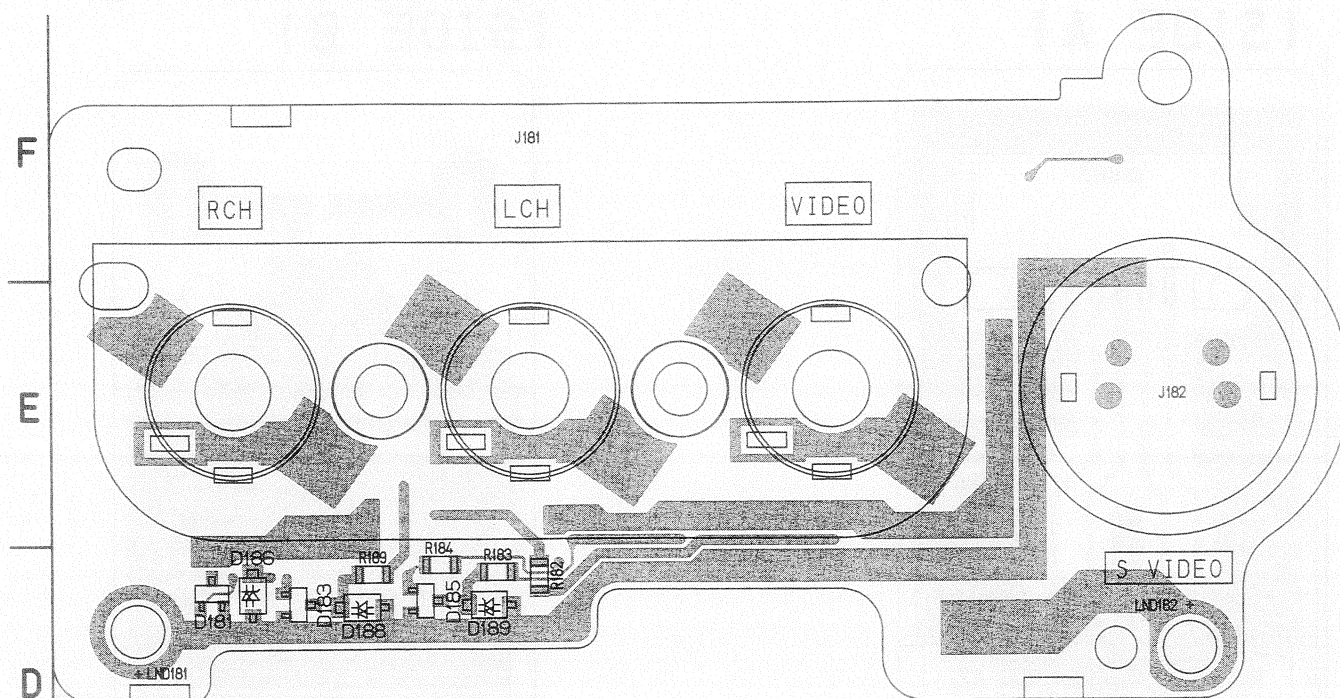
For Schematic Diagram
• Refer to page 4-69 for printed wiring board.



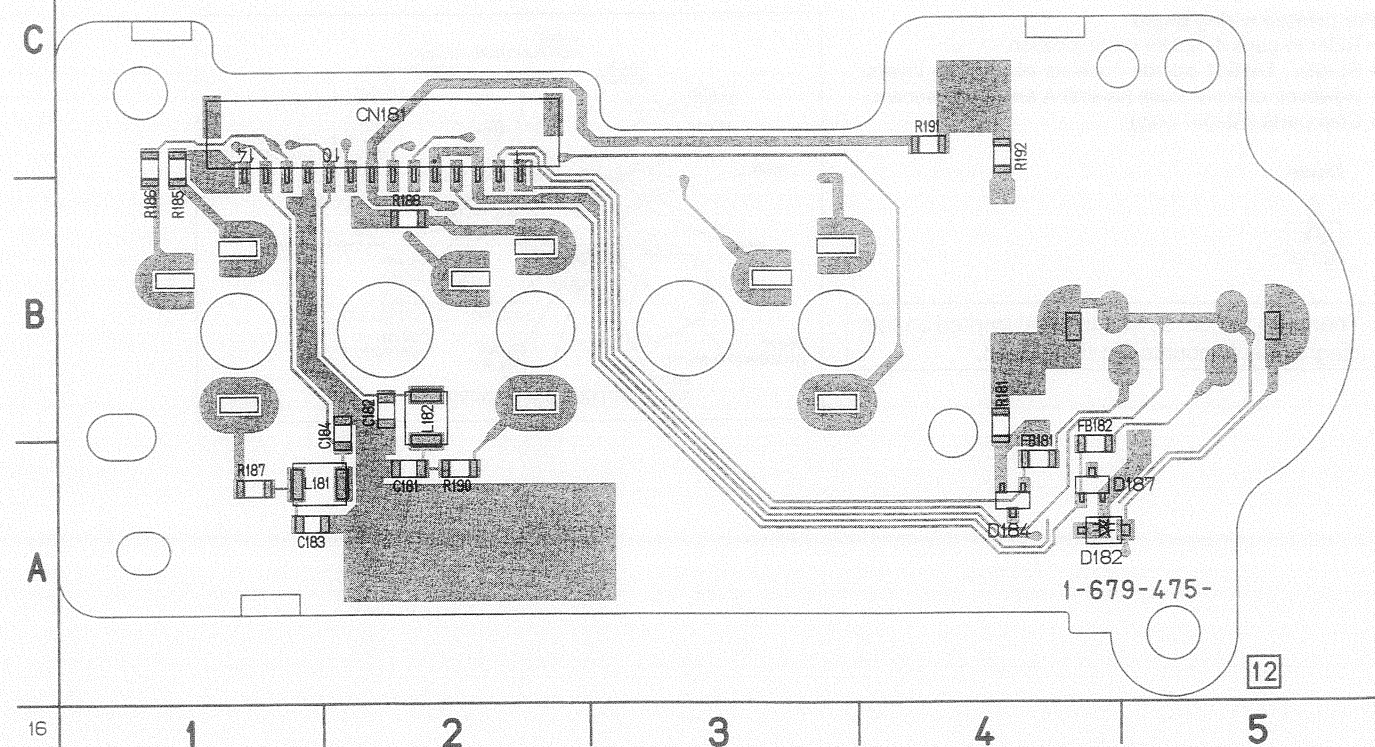
JK-197 (VIDEO/AUDIO IN/OUT), VO-012 (VIDEO OUT) PRINTED WIRING BOARDS

— Ref. No. JK-197, VO-012 Boards; 1,000 Series —

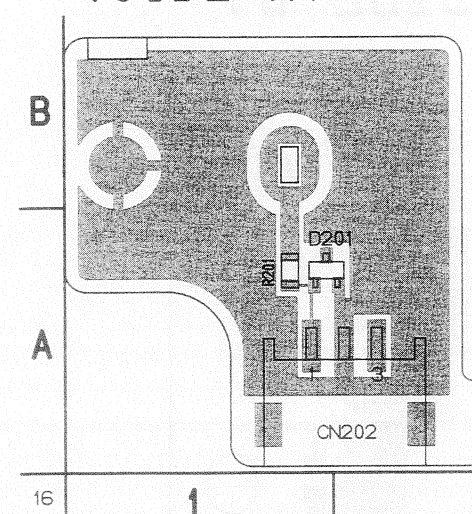
JK-197 BOARD (SIDE A)



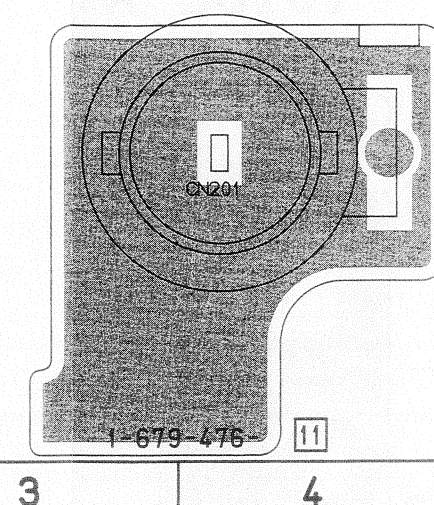
JK-197 BOARD (SIDE B)



VO-012 BOARD
(SIDE A)



VO-012 BOARD
(SIDE B)



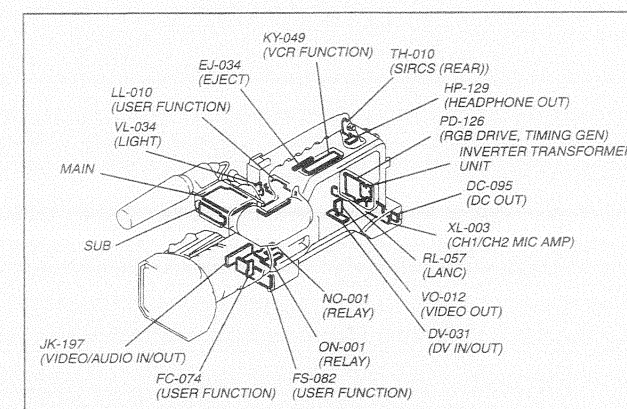
For printed wiring board

- Refer to page 4-128 for parts location.
- JK-197, VO-012 boards consists of multiple layers. However, only the sides (layers) A and B are shown.
- Chip parts

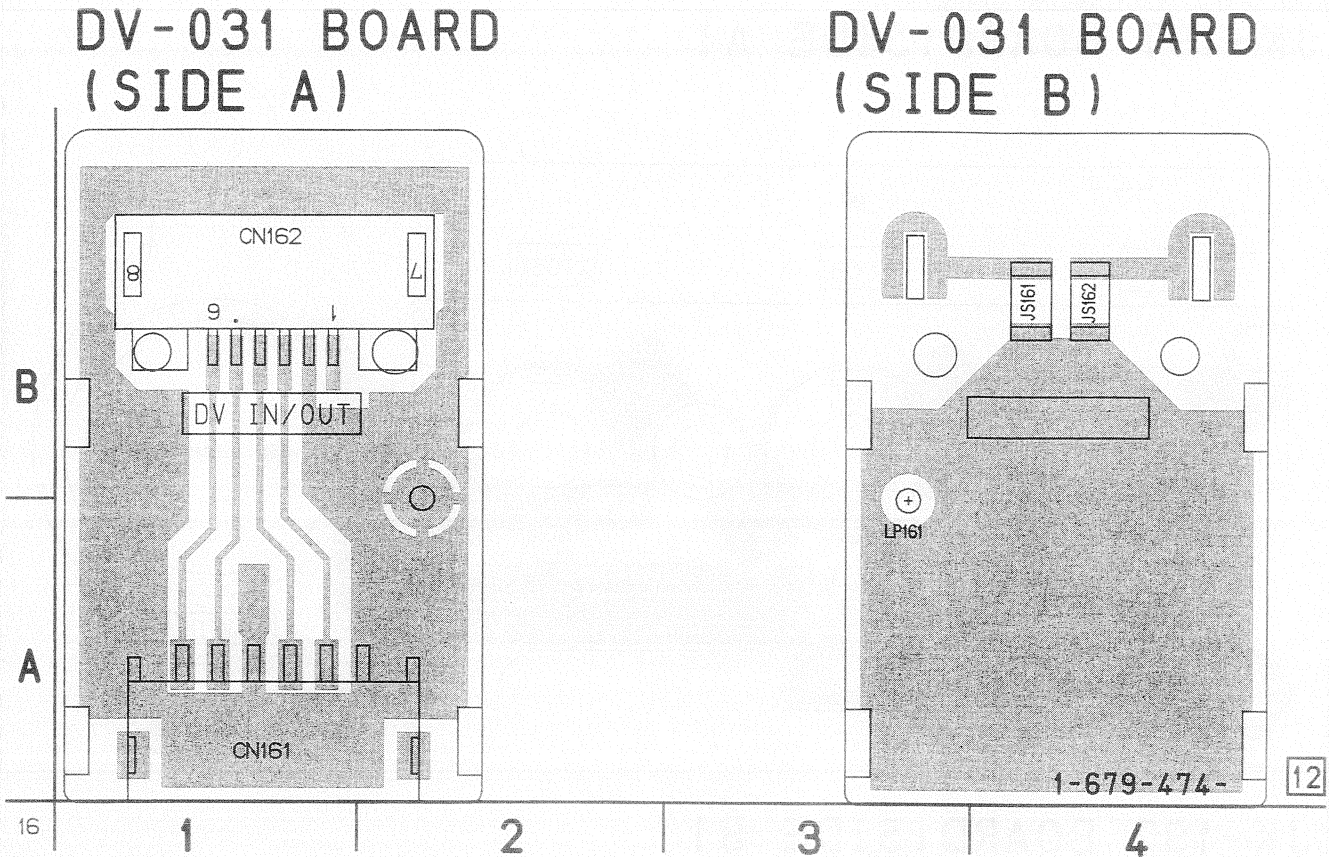
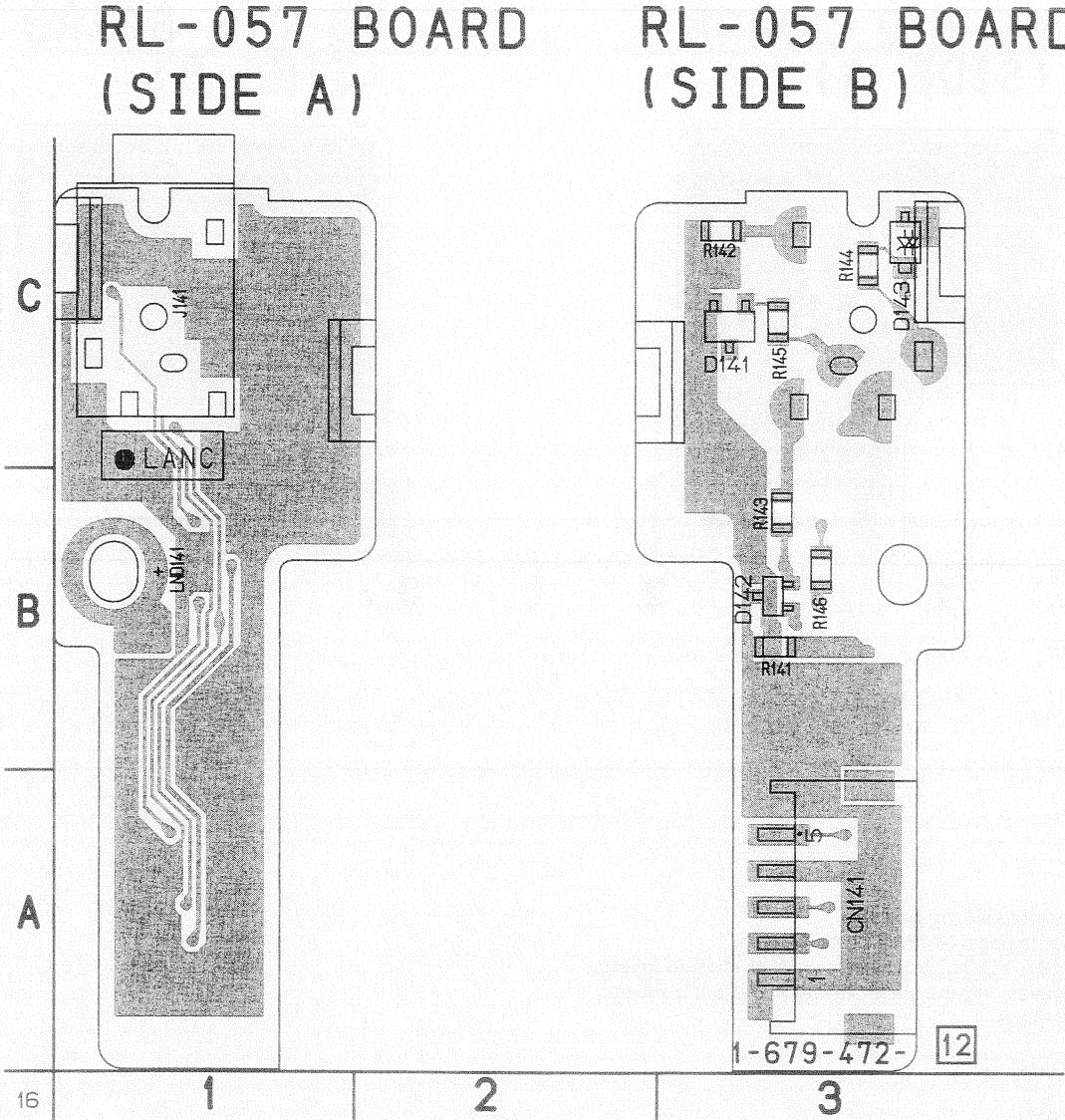
Diode



There are few cases that the part printed on this diagram isn't mounted in this model.



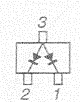
RL-057 (LANC), DV-031 (DV IN/OUT) PRINTED WIRING BOARDS
— Ref. No. RL-057, DV-031 Boards; 1,000 Series —



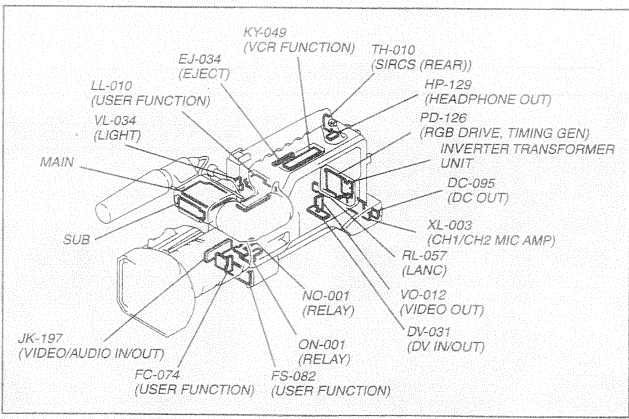
For printed wiring board

- Refer to page 4-128 for parts location.
- RL-057, DV-031 boards consists of multiple layers. However, only the sides (layers) A and B are shown.
- Chip parts (RL-057 only)

Diode

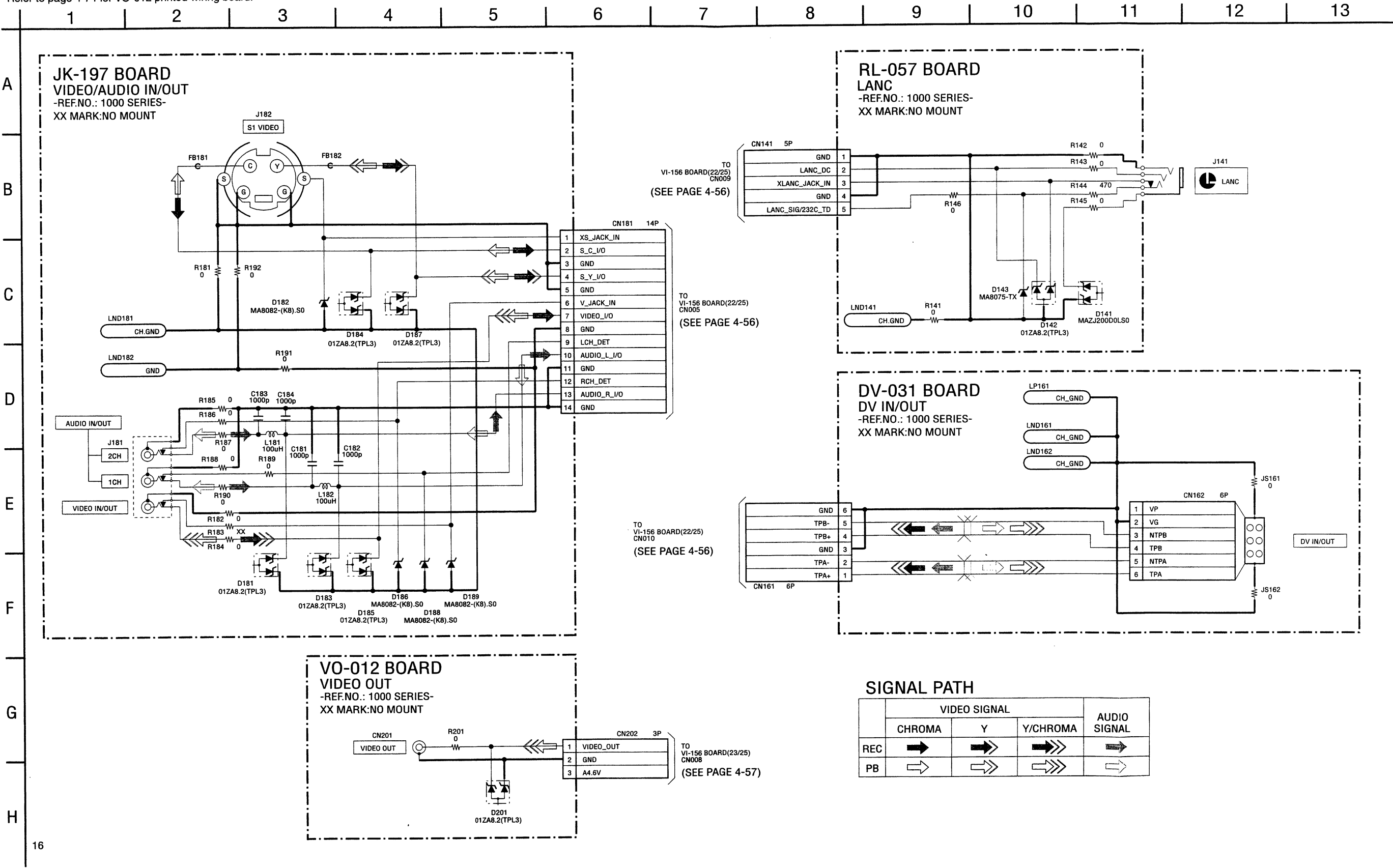


There are few cases that the part printed on this diagram isn't mounted in this model.



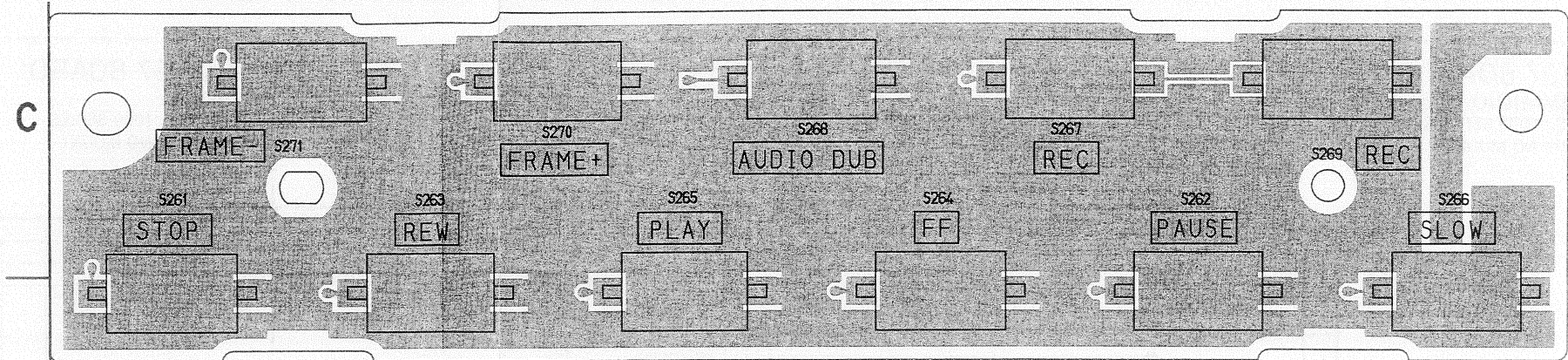
For Schematic Diagram

- Refer to page 4-73 for JK-197 printed wiring board.
- Refer to page 4-74 for VO-012 printed wiring board.

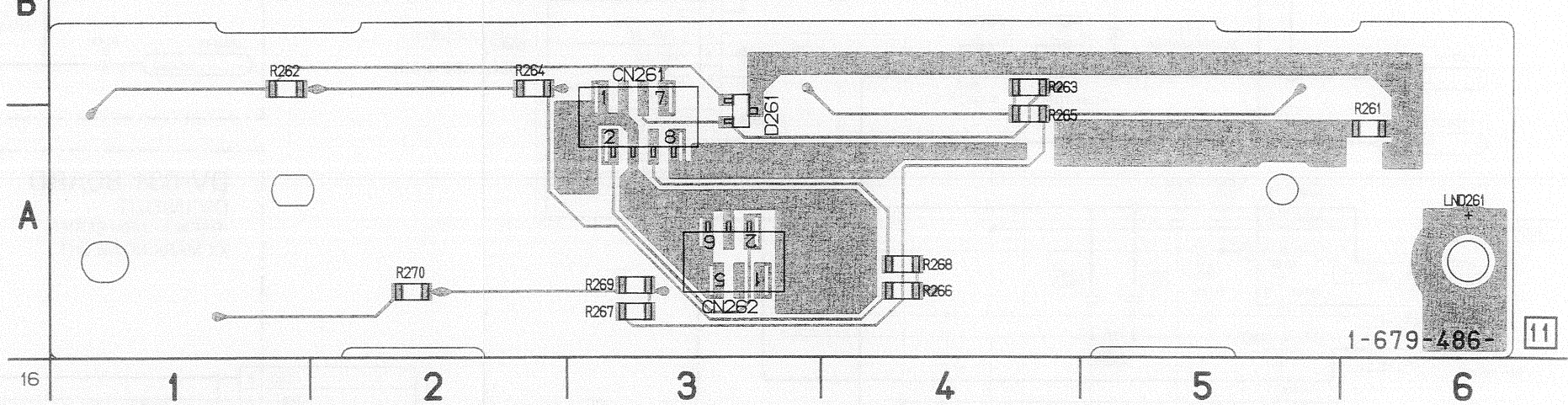


KY-049 (VCR FUNCTION), EJ-034 (EJECT) PRINTED WIRING BOARDS
— Ref. No. KY-049, EJ-034 Boards; 1,000 Series —

KY-049 BOARD (SIDE A)



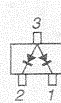
KY-049 BOARD (SIDE B)



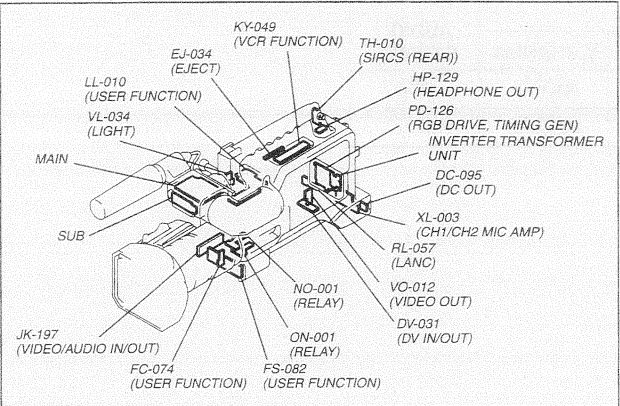
For printed wiring board

- Refer to page 4-128 for parts location.
- KY-049, EJ-034 boards consists of multiple layers. However, only the sides (layers) A and B are shown.
- Chip parts (KY-049 only)

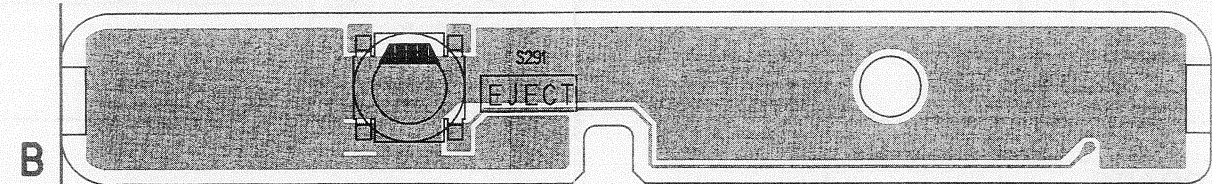
Diode



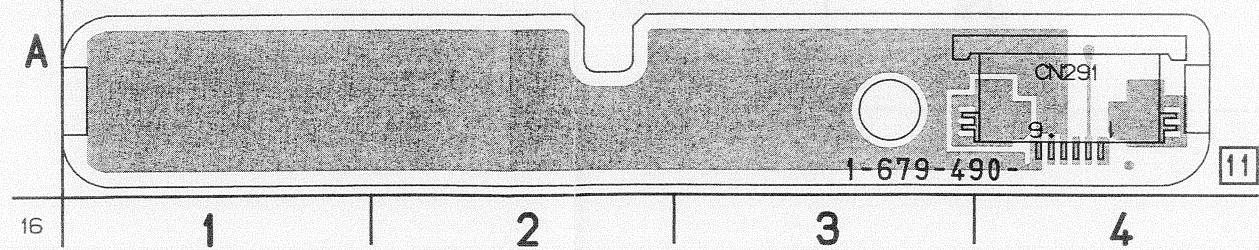
There are few cases that the part printed on this diagram isn't mounted in this model.



EJ-034 BOARD (SIDE A)

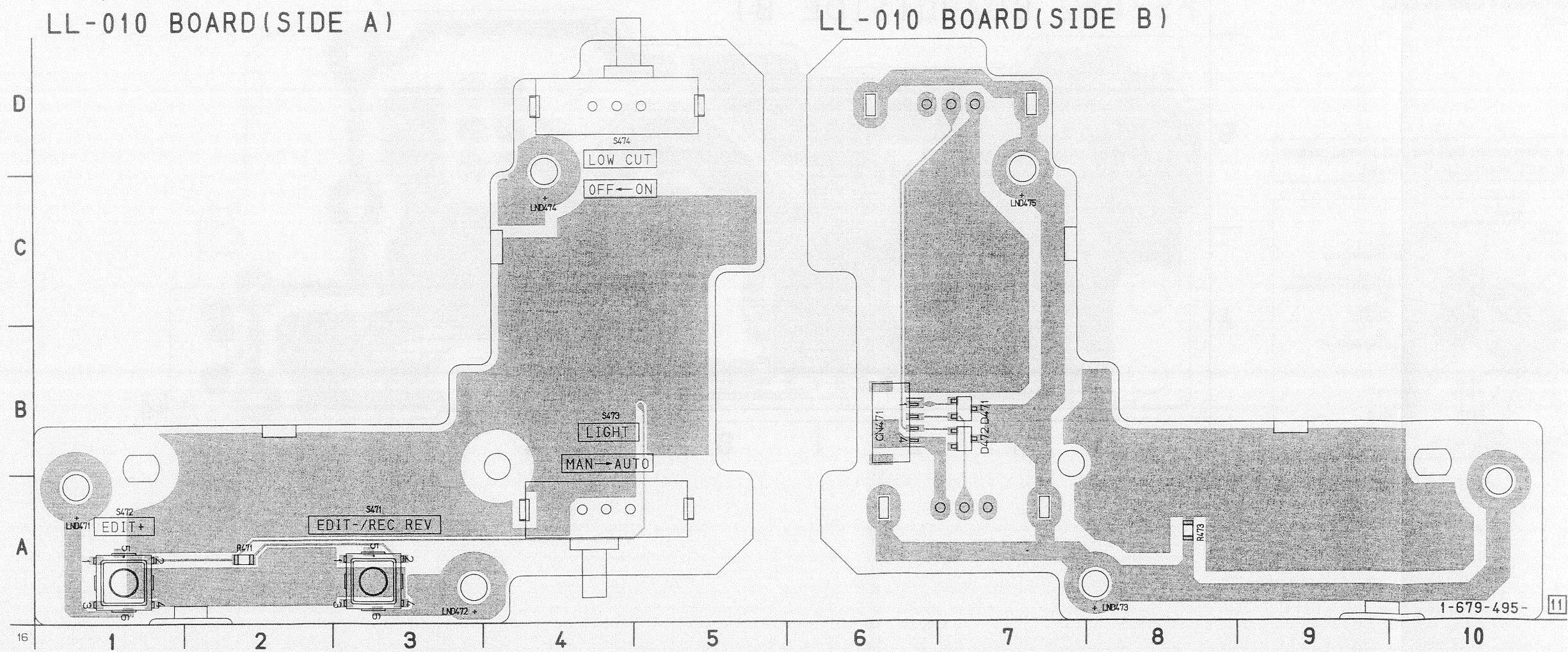
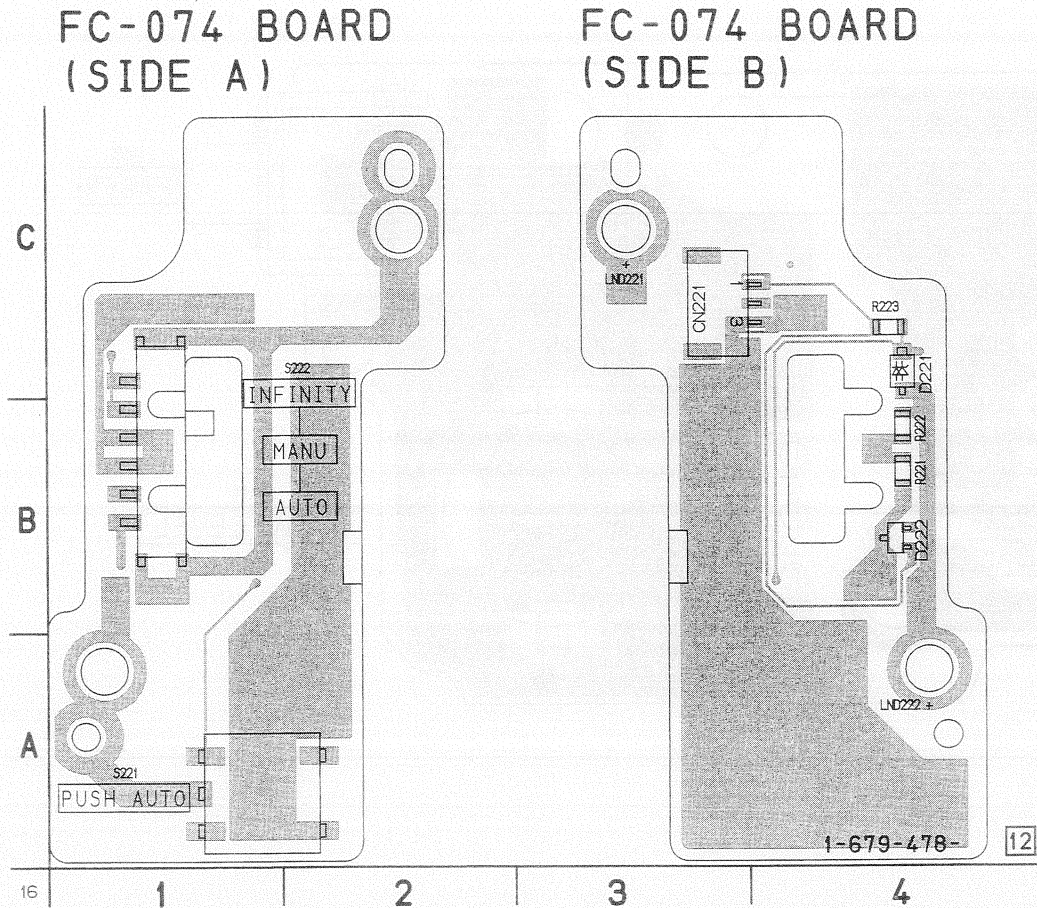


EJ-034 BOARD (SIDE B)



FC-074 (USER FUNCTION), LL-010 (USER FUNCTION) PRINTED WIRING BOARDS

— Ref. No. FC-074, LL-010 Boards; 1,000 Series —



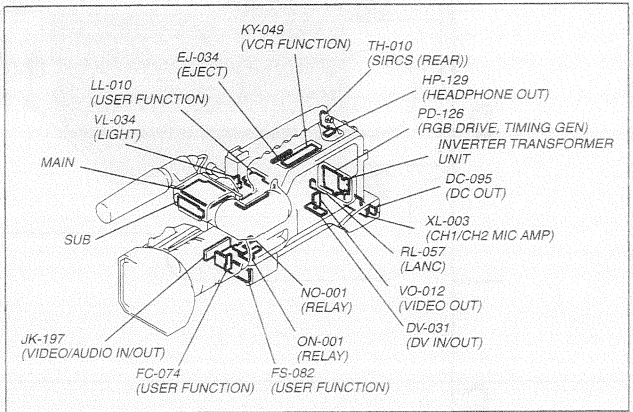
For printed wiring board

- Refer to page 4-128 for parts location.
- FC-074, LL-010 boards consists of multiple layers. However, only the sides (layers) A and B are shown.
- Chip parts

Diode

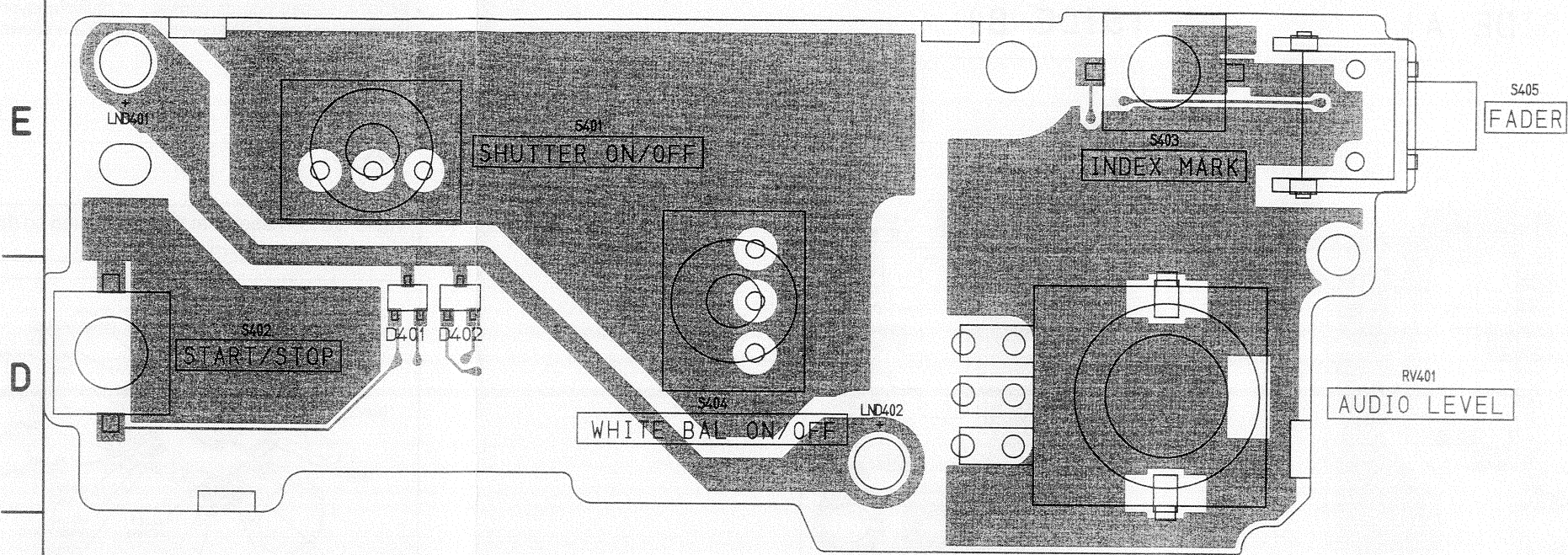


There are few cases that the part printed on this diagram isn't mounted in this model.



FS-082 (USER FUNCTION) PRINTED WIRING BOARD
— Ref. No. FS-082 Board; 2,000 Series —

FS-082 BOARD (SIDE A)



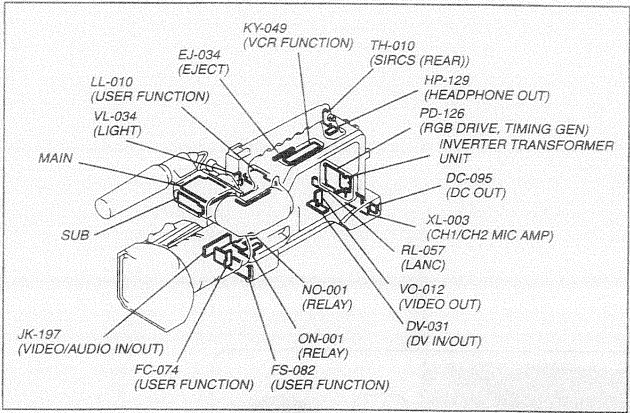
For printed wiring board

- Refer to page 4-128 for parts location.
- FS-082 board consists of multiple layers. However, only the sides (layers) A and B are shown.
- Chip parts

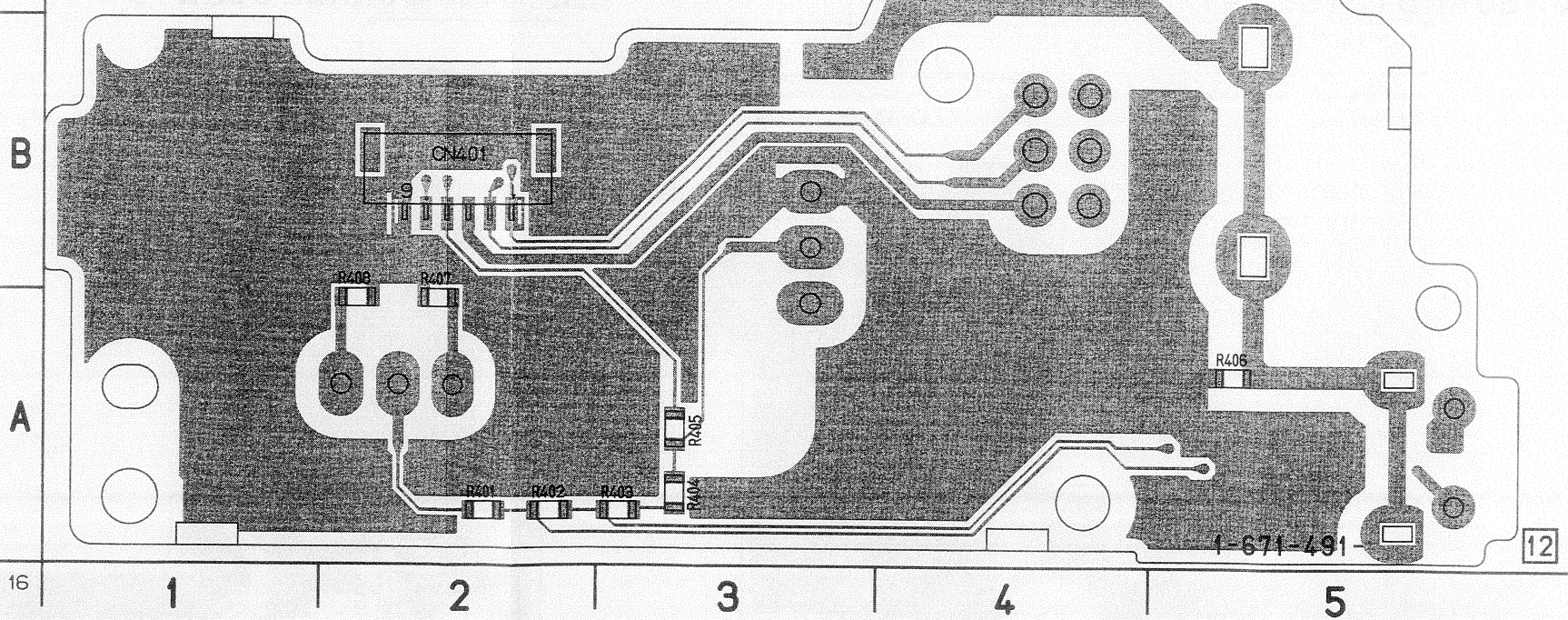
Diode



There are few cases that the part printed on this diagram isn't mounted in this model.

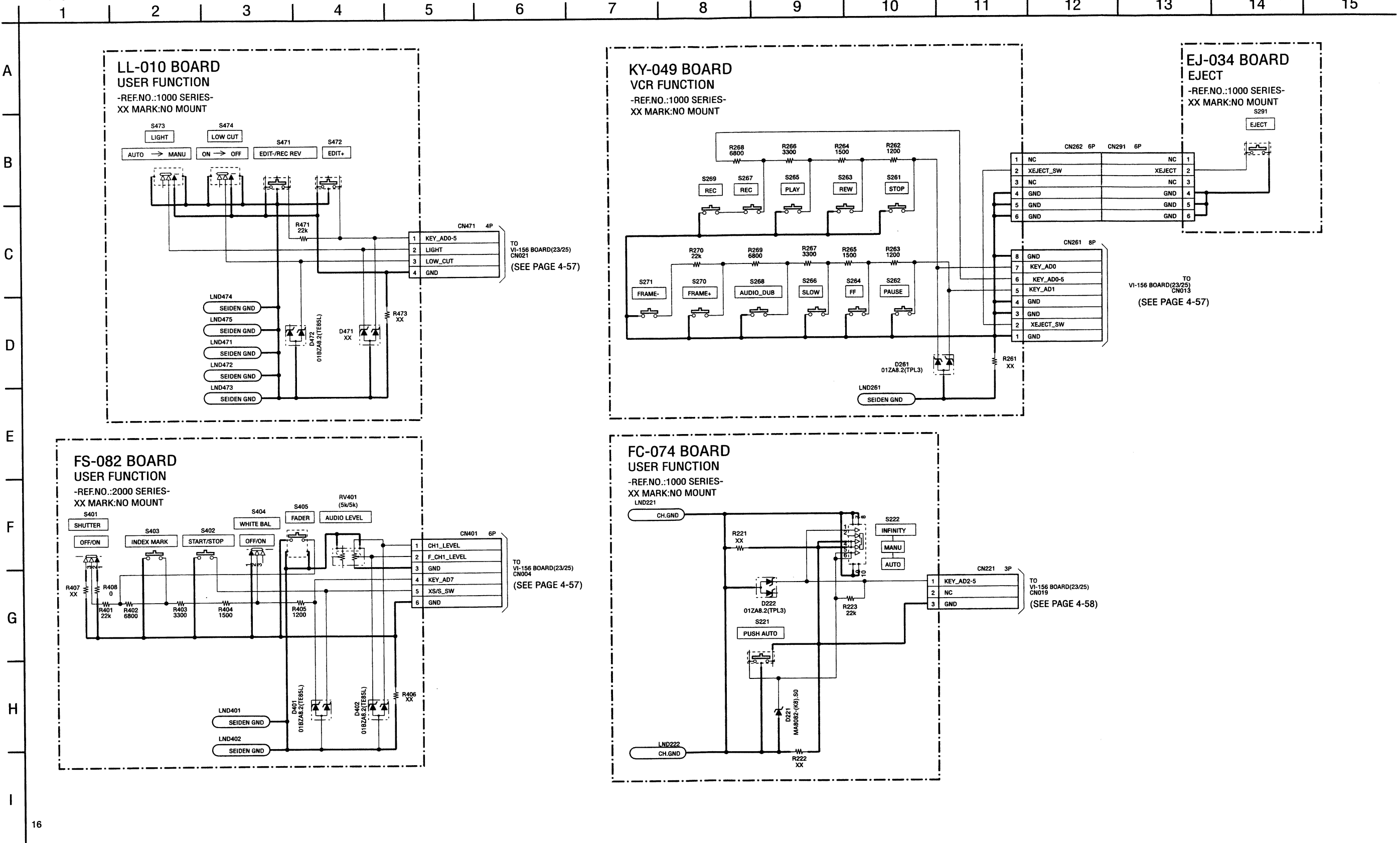


FS-082 BOARD (SIDE B)



For Schematic Diagram

- Refer to page 4-79 for KY-049, EJ-034 printed wiring boards.
- Refer to page 4-81 for FC-074, LL-010 printed wiring boards.



- Refer to page 4-129 for parts location.
- SW-343 board consists of multiple layers. However, only the sides (layers) A and B are shown.
- Chip parts

ME-019
(MIC AMP, EVF OUT)

SW-343
(USER FUNCTION)

DD-146
(DC-DC CONVERTER)

IN-057
(DC IN)

MS-056
(MS CONNECTOR)

VI-156
(CAMERA, DV/MS INTERFACE,
SERVO, REC/PEB HEAD AMP,
AUDIO, DD CONV.)

KP-011
(MENU SELECT)

PM-040
(MODE SELECT)

AE-023
(USER FUNCTION)

SB-036
(USER FUNCTION)

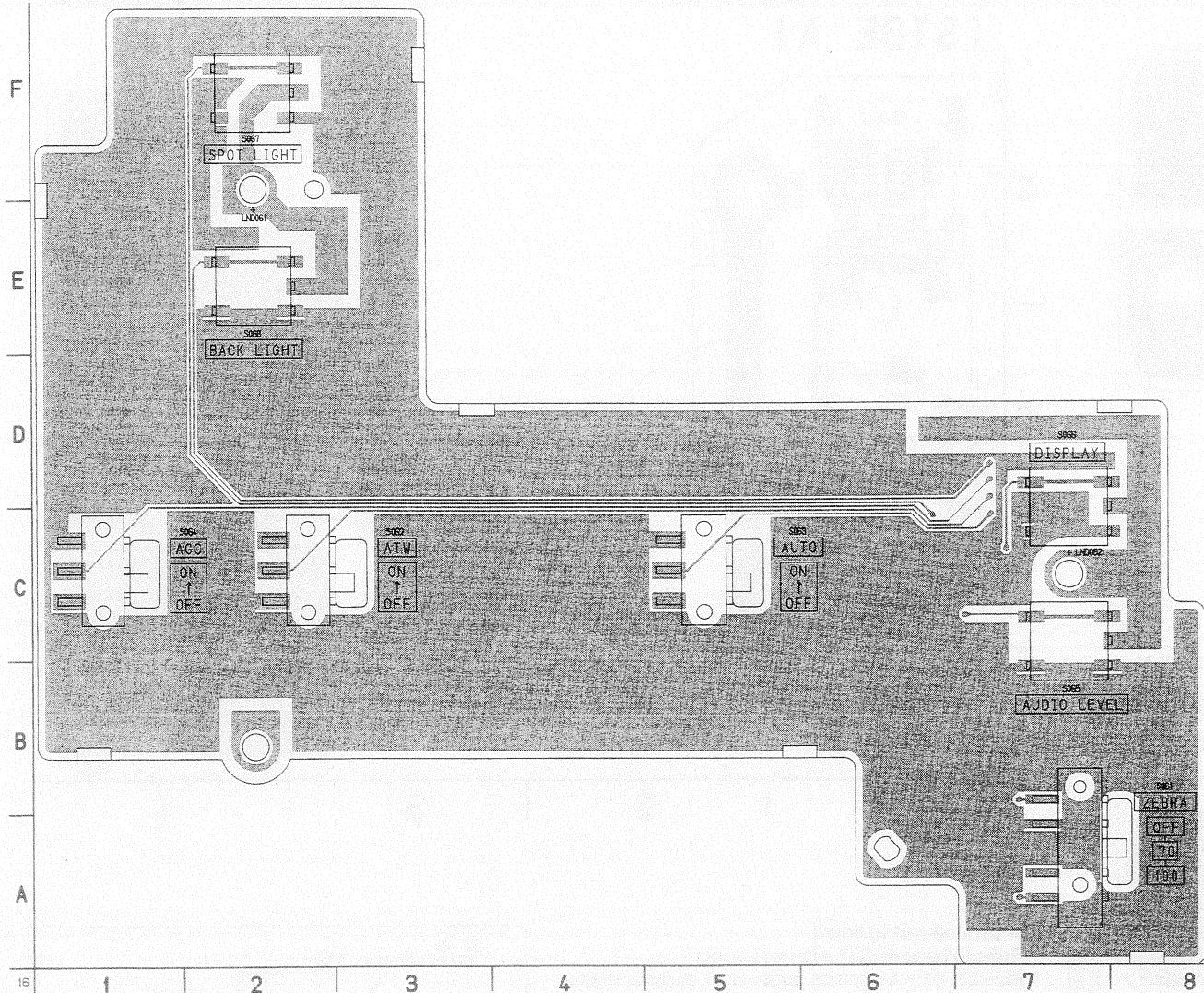
LED (A)

LED (B)

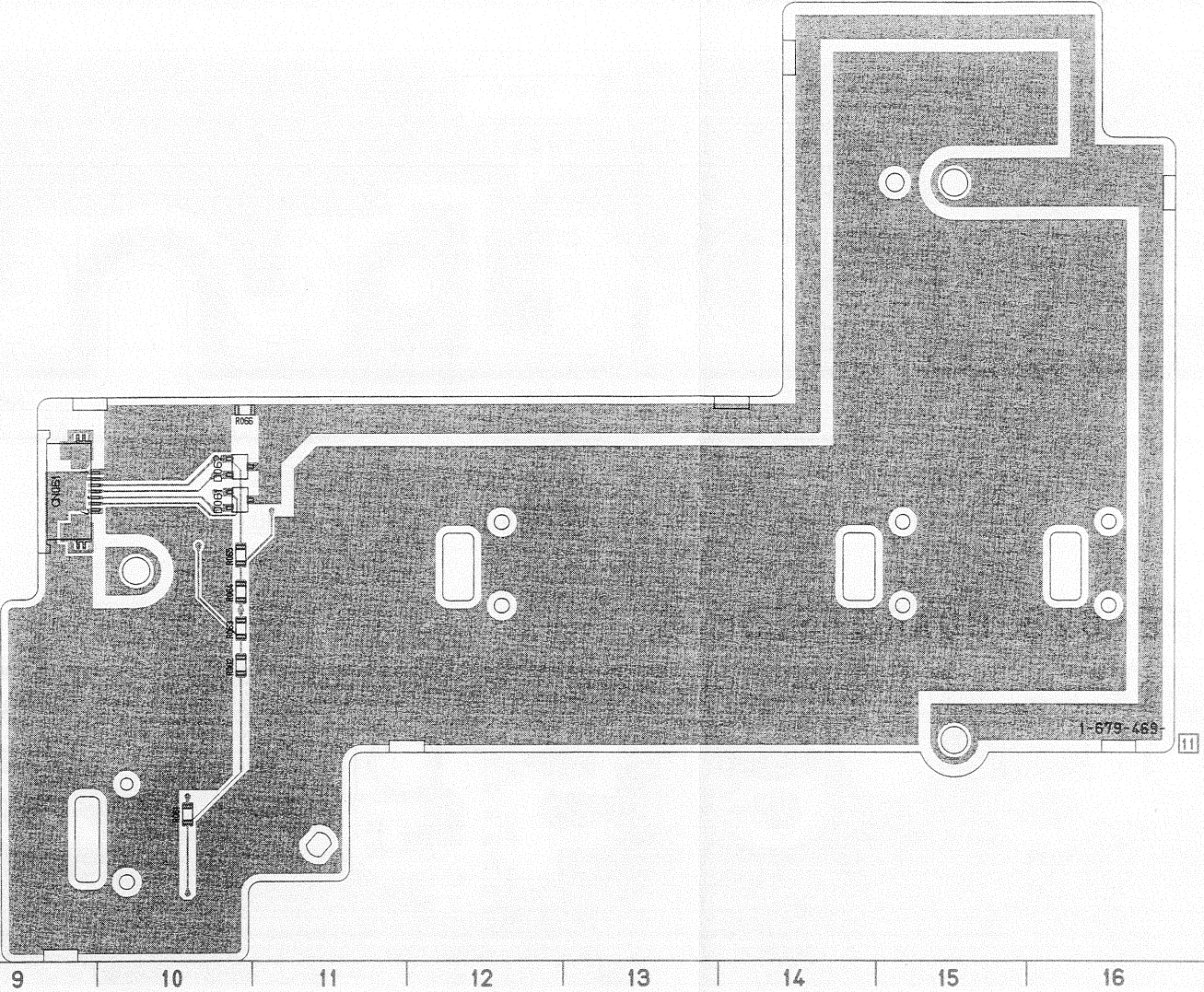
SB-036 (USER FUNCTION), PM-040 (MODE SELECT) PRINTED WIRING BOARDS

— Ref. No. SB-036, PM-040 Boards; 1,000 Series —

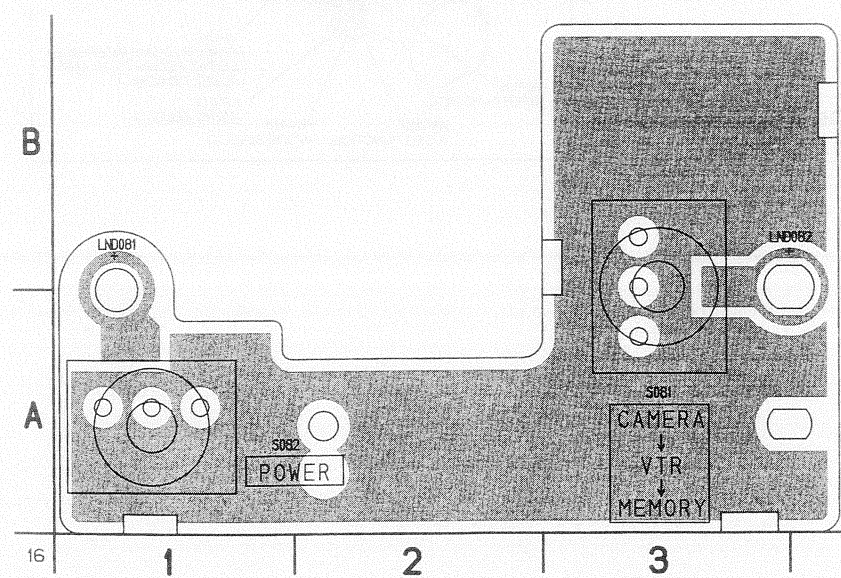
SB-036 BOARD (SIDE A)



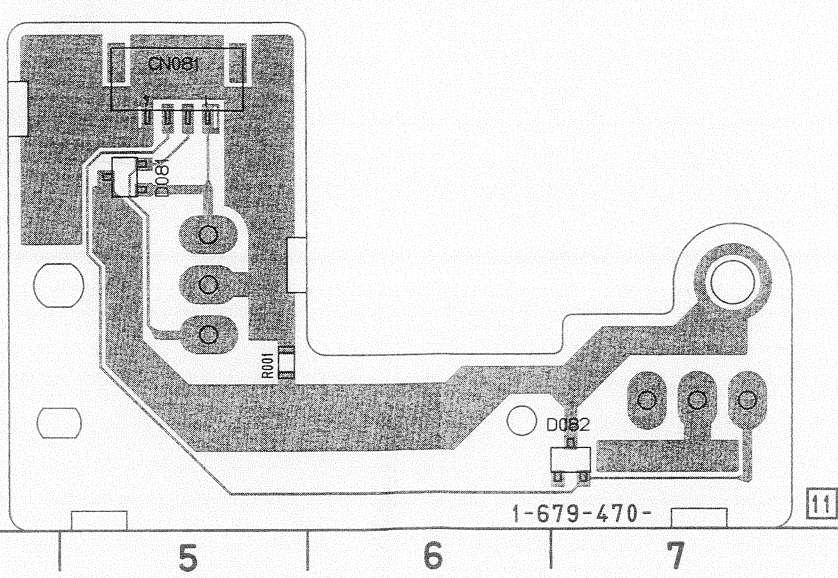
SB-036 BOARD (SIDE B)



PM-040 BOARD (SIDE A)



PM-040 BOARD (SIDE B)



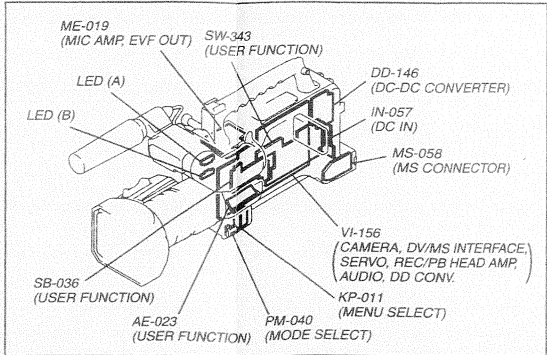
For printed wiring board

- Refer to page 4-129 for parts location.
- SB-036, PM-040 boards consists of multiple layers. However, only the sides (layers) A and B are shown.
- Chip parts

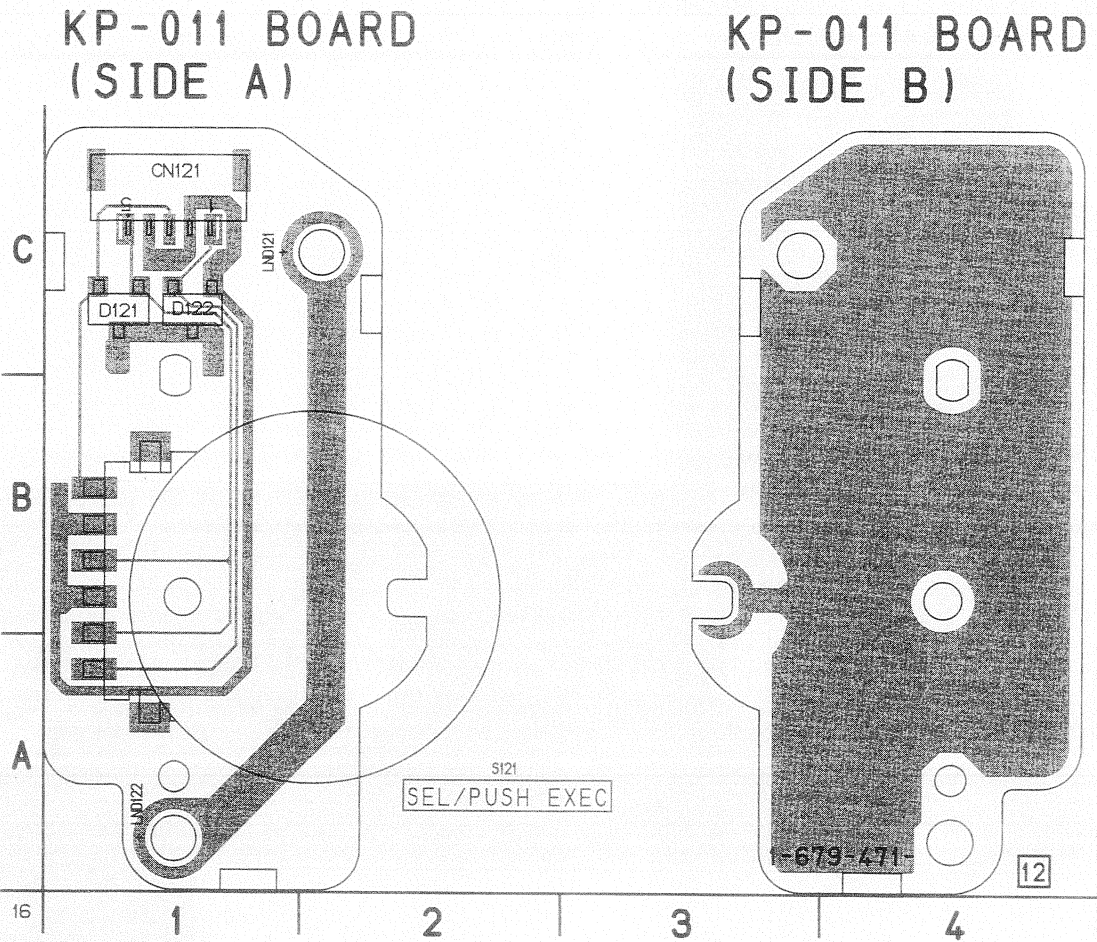
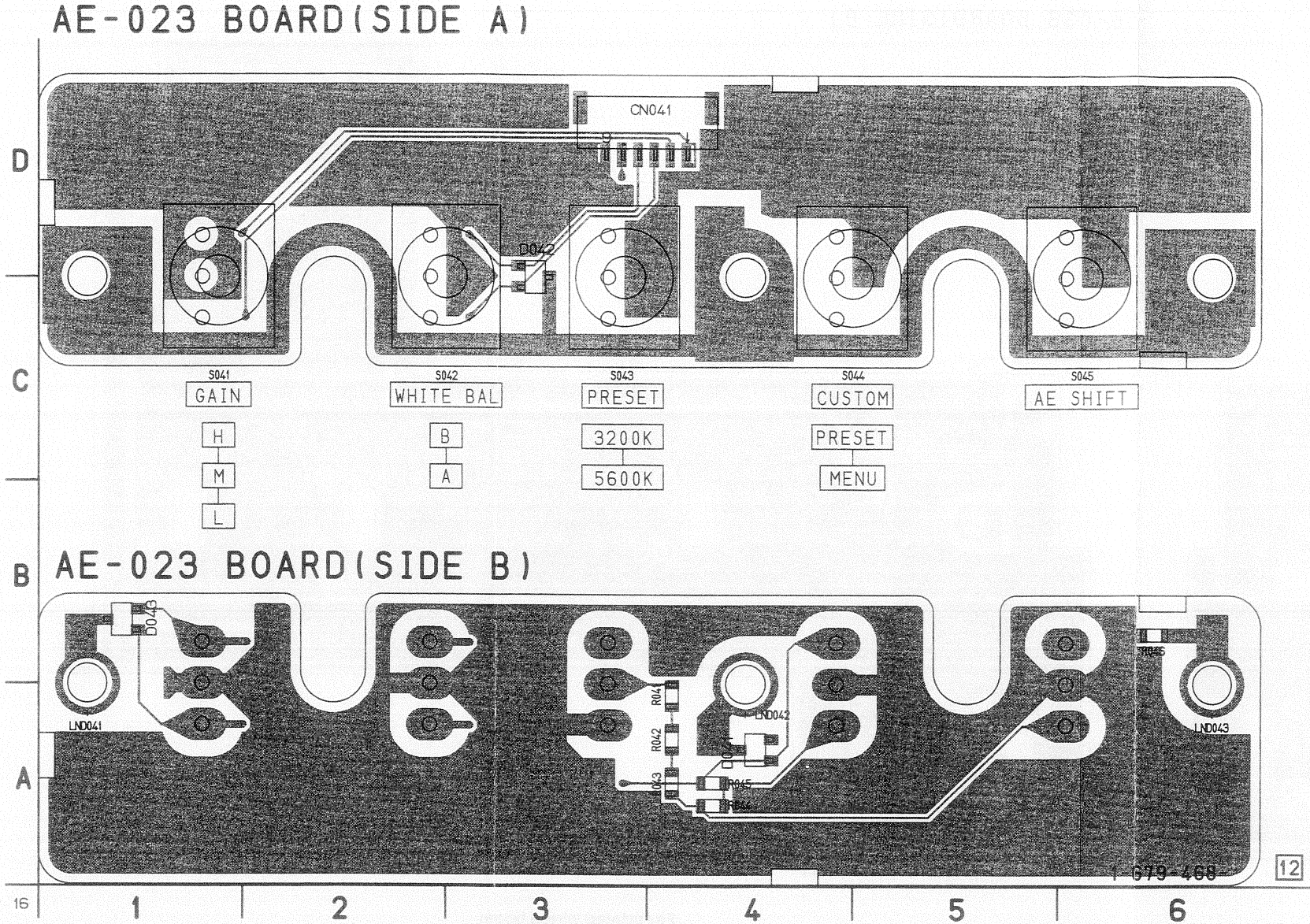
Diode



There are few cases that the part printed on this diagram isn't mounted in this model.

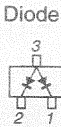


AE-023 (USER FUNCTION), KP-011 (MENU SELECT) PRINTED WIRING BOARDS
— Ref. No. AE-023, KP-011 Boards; 10,000 Series —

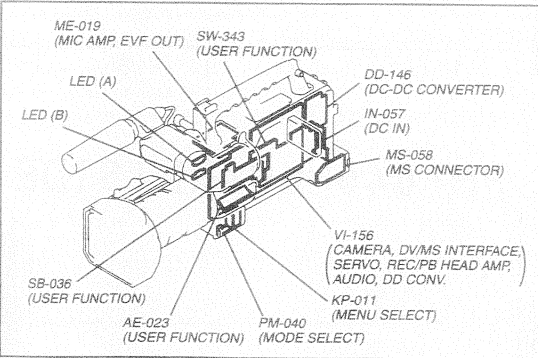


For printed wiring board

- Refer to page 4-129 for parts location.
- AE-023, KP-011 boards consists of multiple layers. However, only the sides (layers) A and B are shown.
- Chip parts

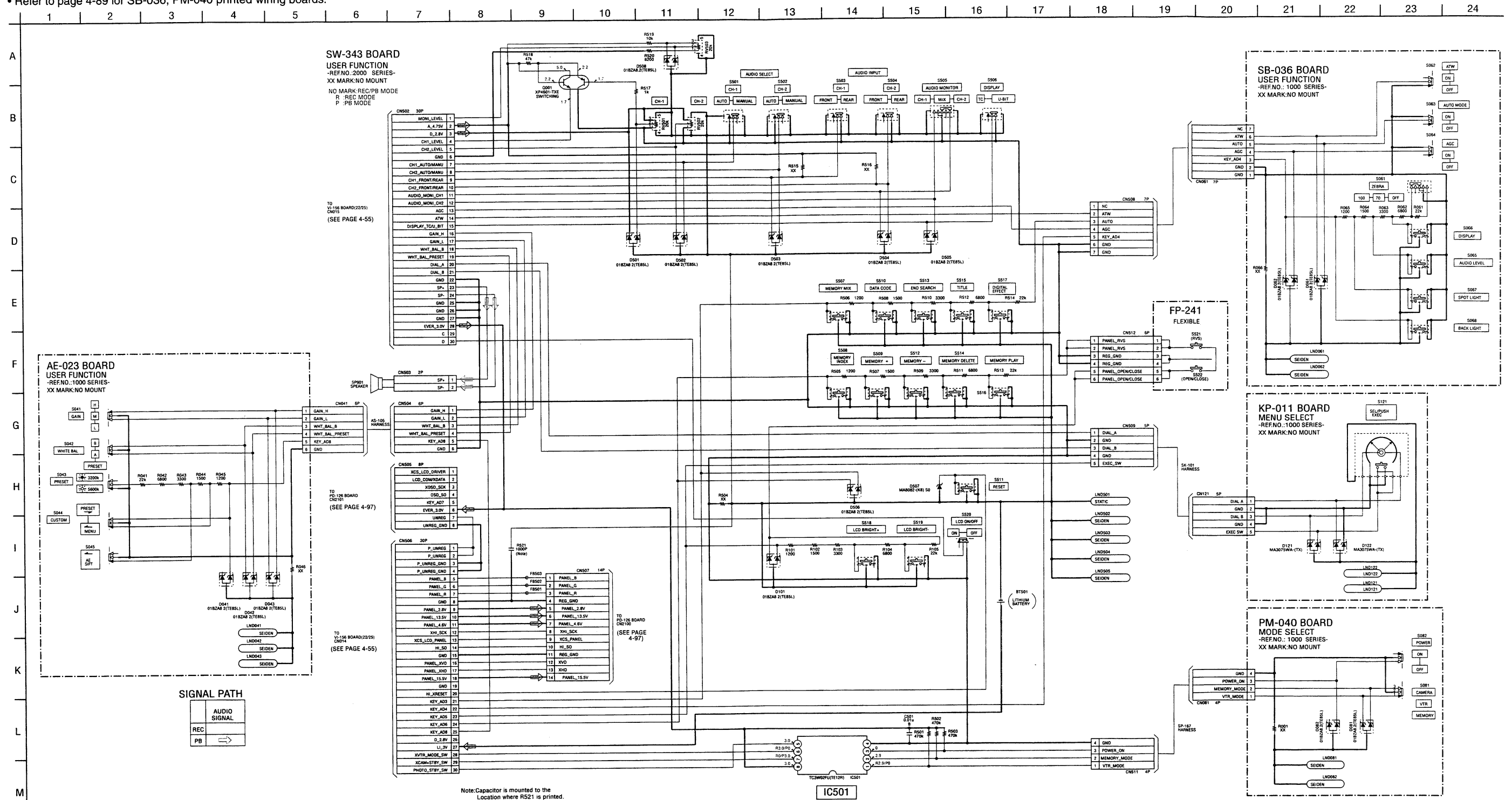


There are few cases that the part printed on this diagram isn't mounted in this model.

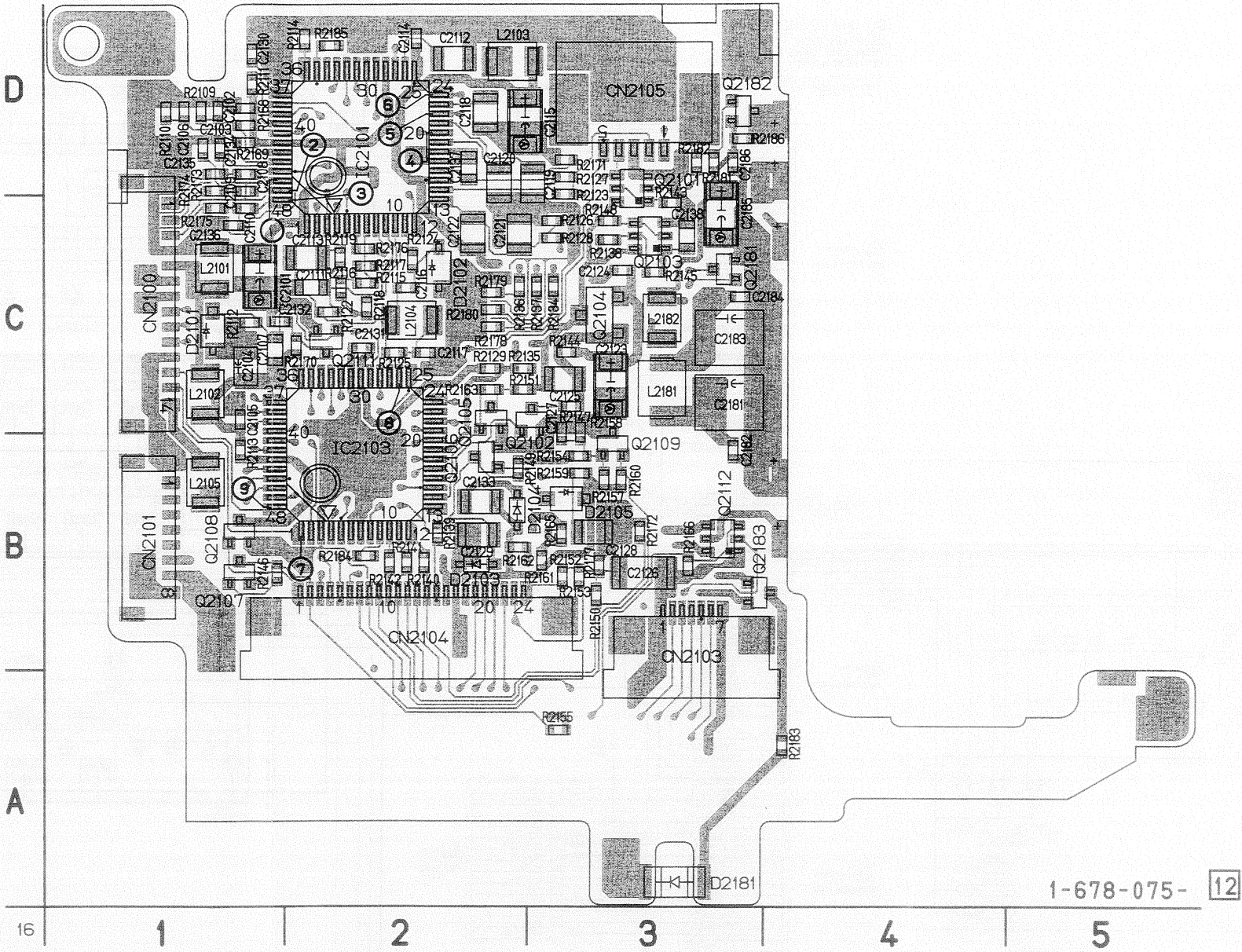


For Schematic Diagram

- Refer to page 4-87 for SW-343 printed wiring board.
- Refer to page 4-89 for SB-036, PM-040 printed wiring boards.

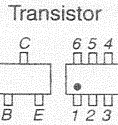


PD-126 (RGB DRIVE/TIMING GEN) PRINTED WIRING BOARD
— Ref. No. PD-126 Board; 20,000 Series —
PD-126 BOARD (SIDE A)

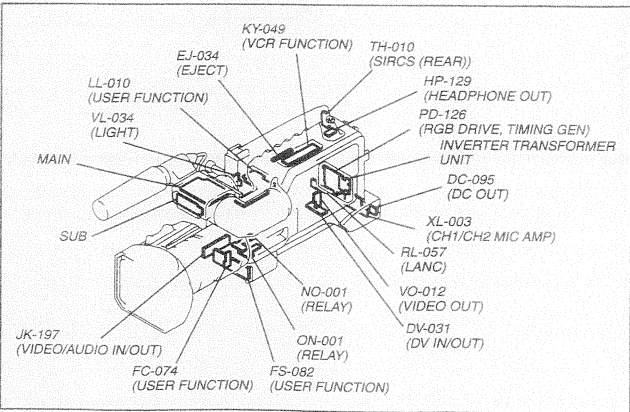


For printed wiring board

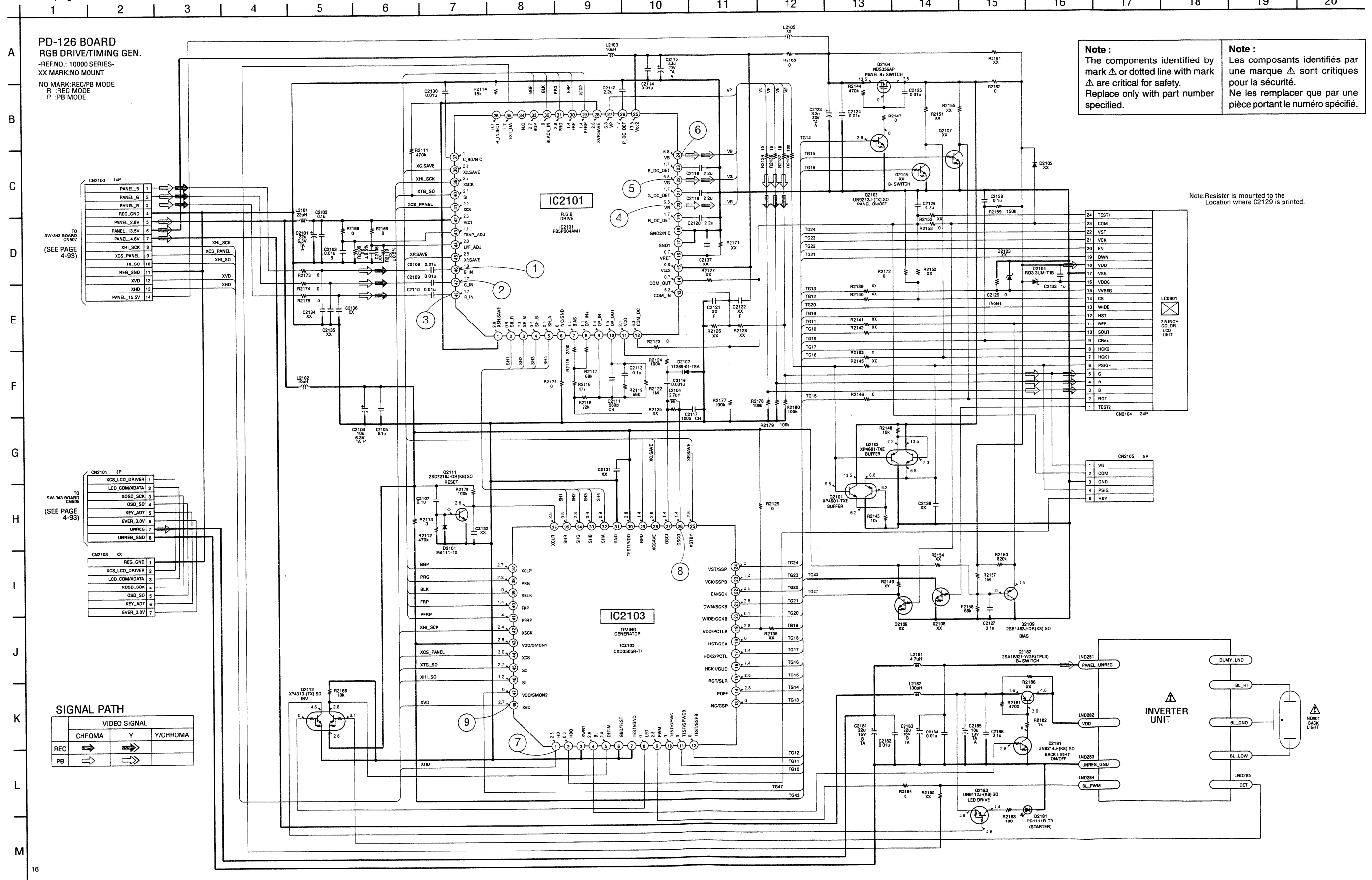
- Refer to page 4-129 for parts location.
- PD-126 board consists of multiple layers. However, only the sides (layers) A and B are shown.
- Chip parts



There are few cases that the part printed on this diagram isn't mounted in this model.



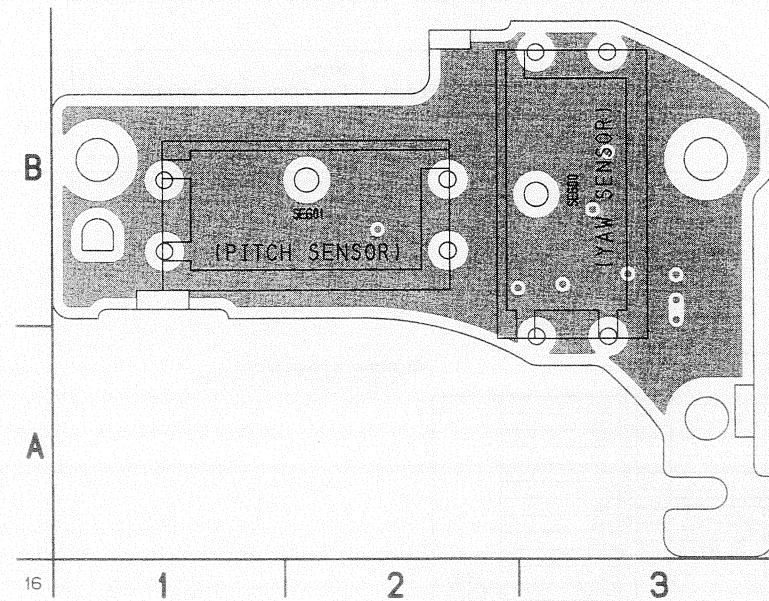
- Refer to page 4-124 for waveforms.



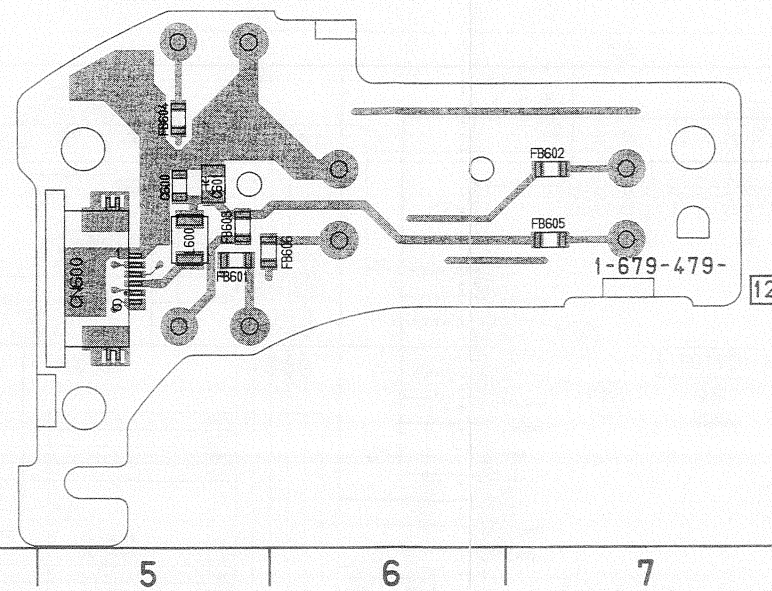
SE-116 (VAP SENSOR), ON-001 (RELAY), NO-001 (RELAY) PRINTED WIRING BOARDS

— Ref. No. SE-116, NO-001 Boards; 1,000 Series, ON-001 Board; 10,000 Series —

SE-116 BOARD(SIDE A)



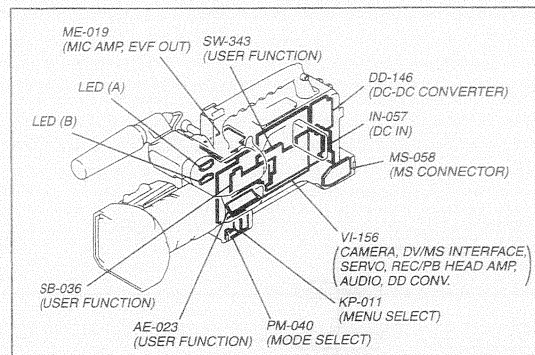
SE-116 BOARD(SIDE B)



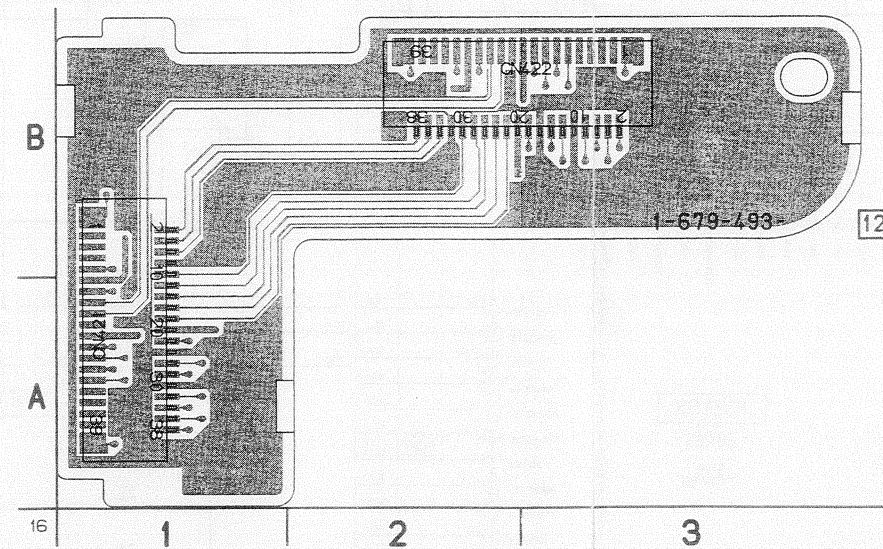
For printed wiring board

- Refer to page 4-130 for parts location.
- SE-116, ON-001, boards consists of multiple layers. However, only the sides (layers) A and B are shown.
- NO-001 board consists of multiple layers. However, only the side (layer) B is shown.

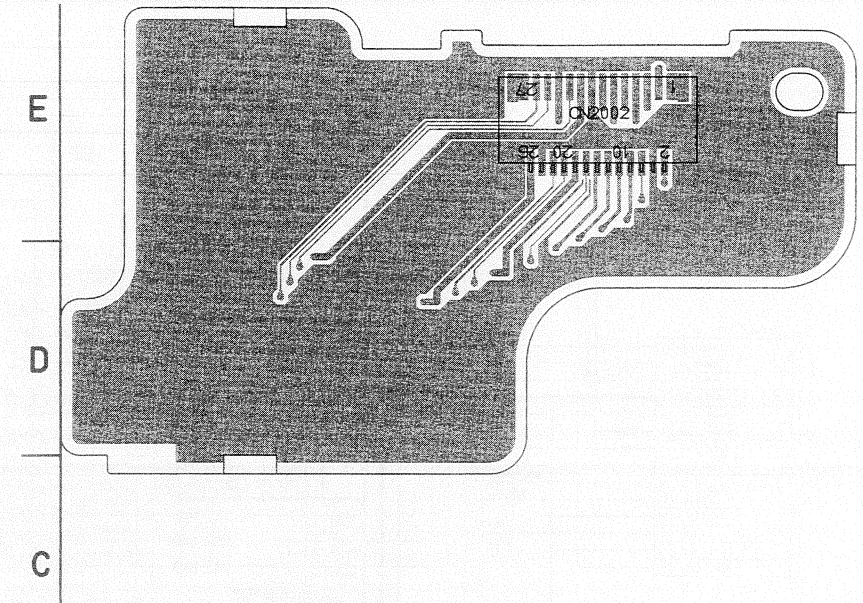
There are few cases that the part printed on this diagram isn't mounted in this model.



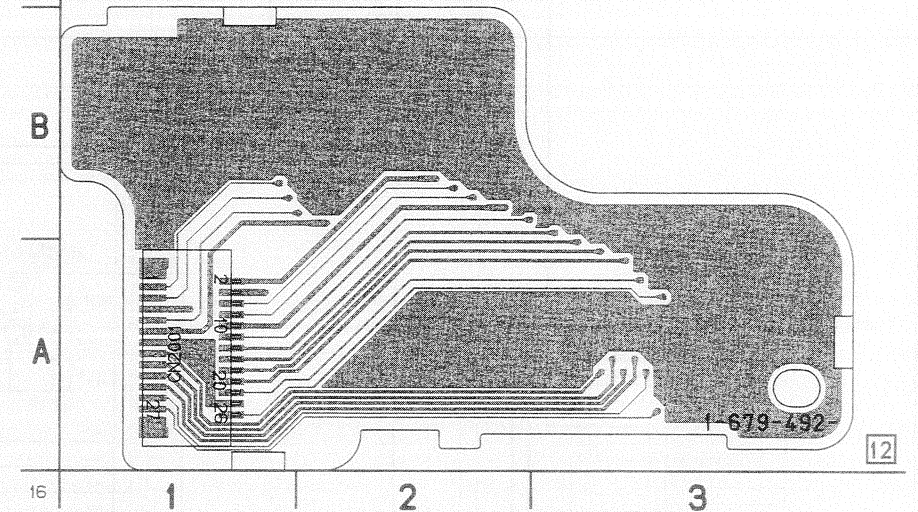
NO-001 BOARD (SIDE B)

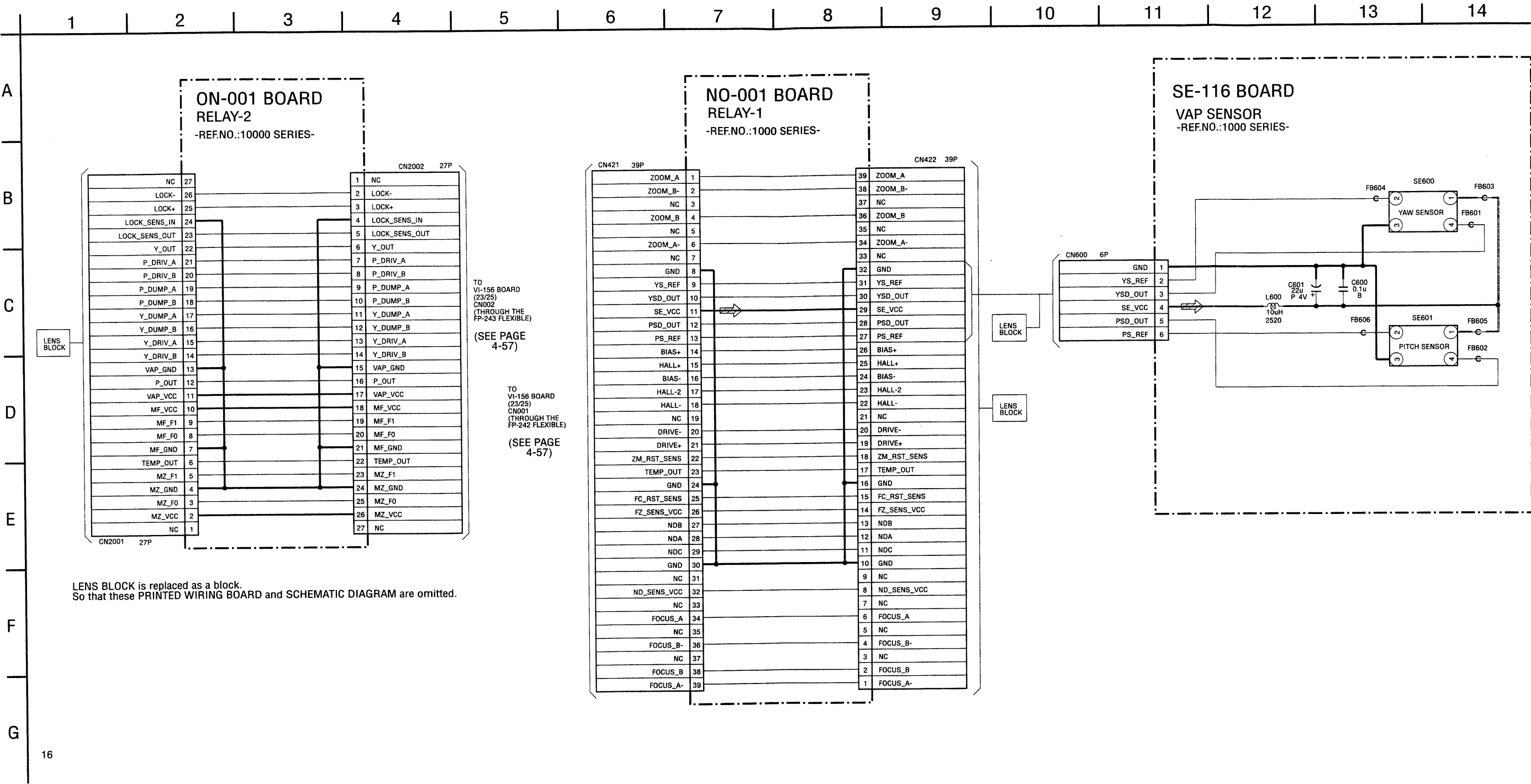


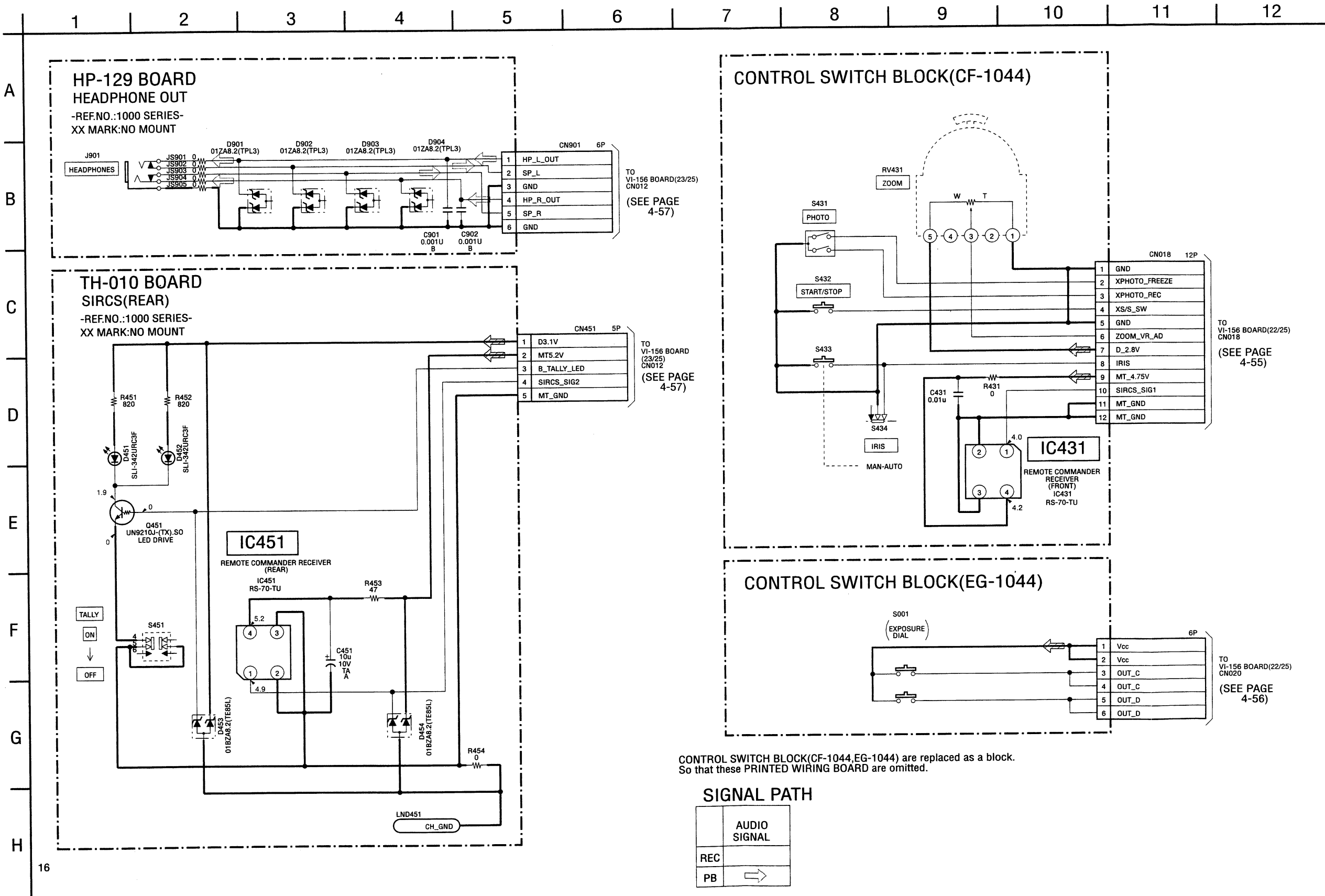
ON-001 BOARD (SIDE A)



ON-001 BOARD (SIDE B)

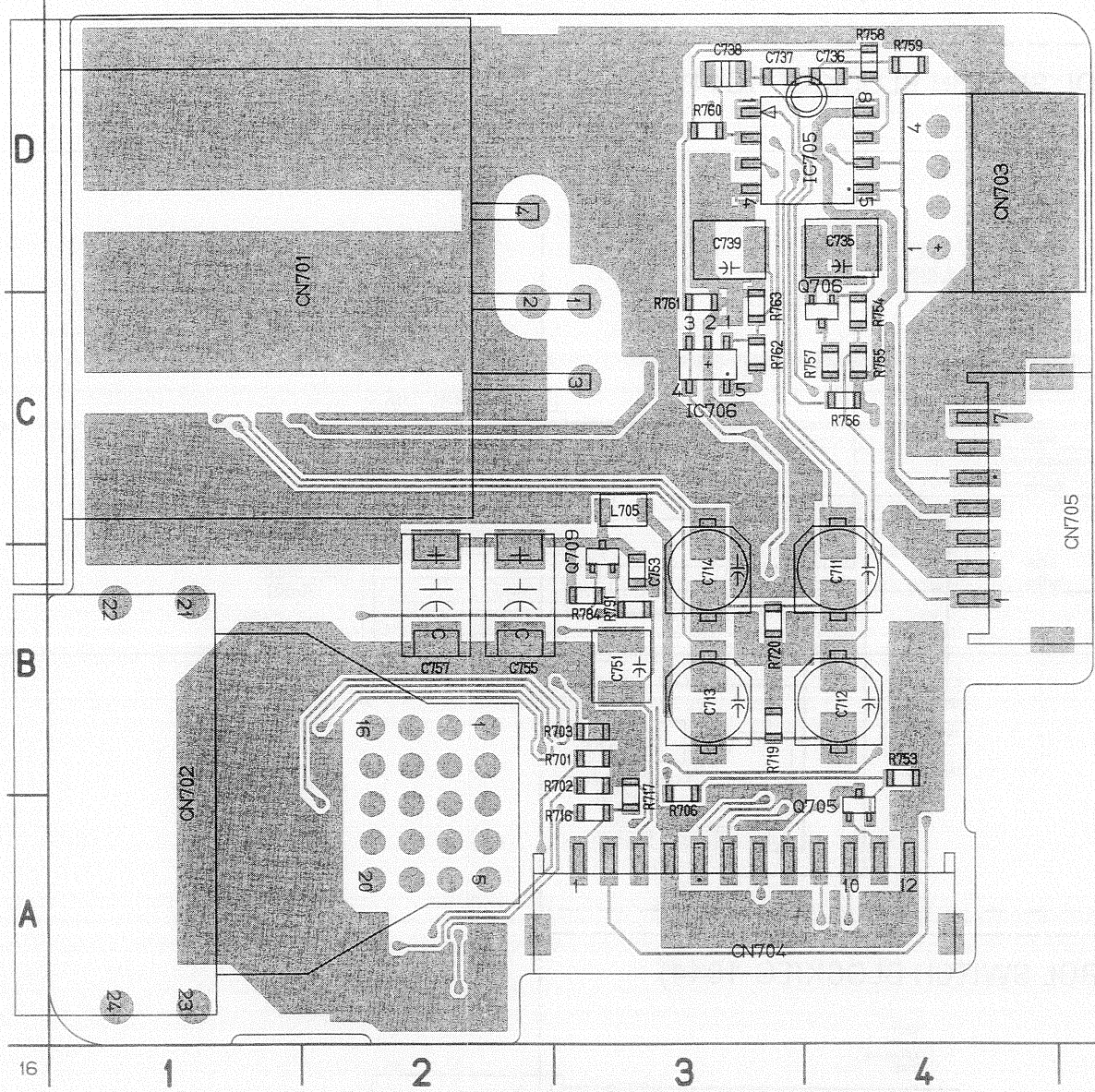




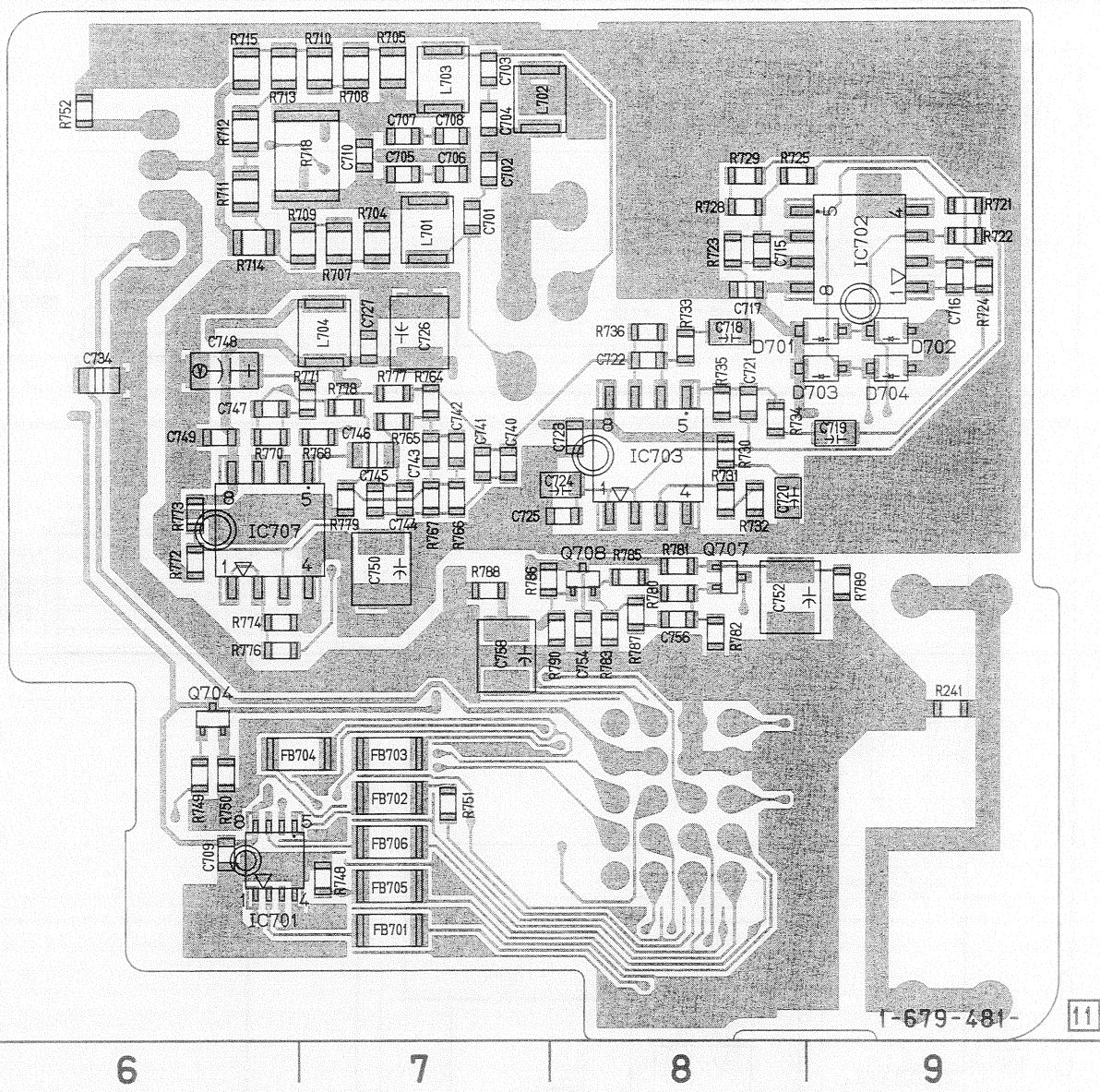


ME-019 (MIC AMP, EVF OUT) PRINTED WIRING BOARD
— Ref. No. ME-019 Board; 1,000 Series —

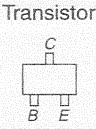
ME-019 BOARD (SIDE A)



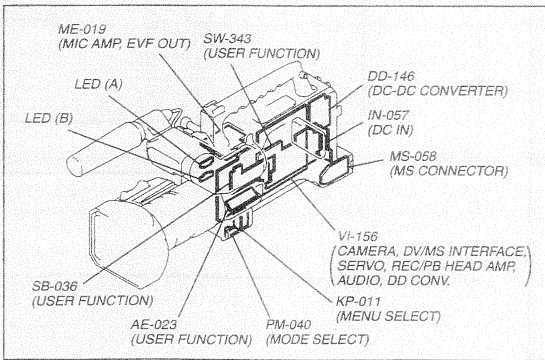
ME-019 BOARD (SIDE B)



- For printed wiring board
- Refer to page 4-130 for parts location.
 - ME-019 board consists of multiple layers. However, only the sides (layers) A and B are shown.
 - Chip parts

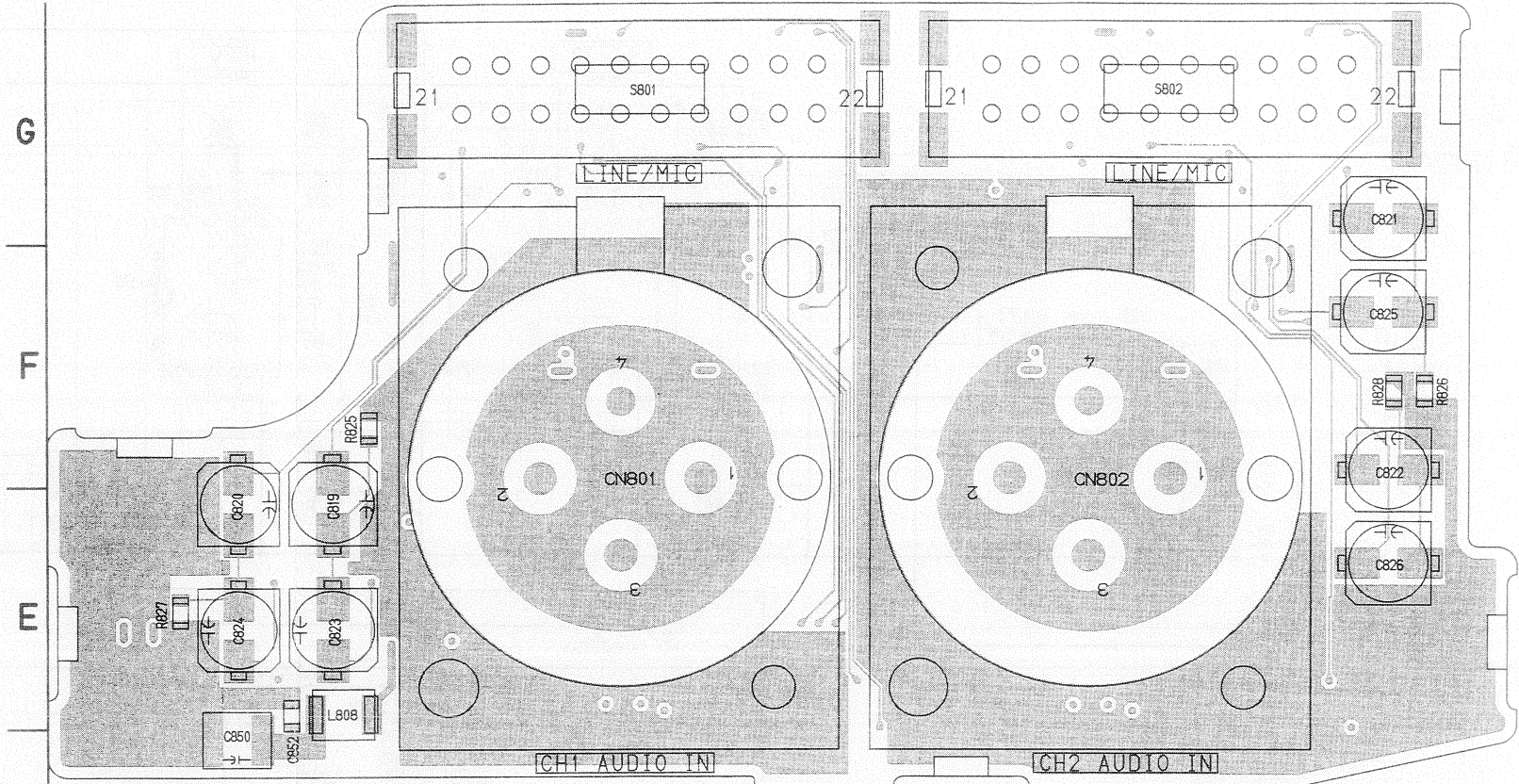


There are few cases that the part printed on this diagram isn't mounted in this model.

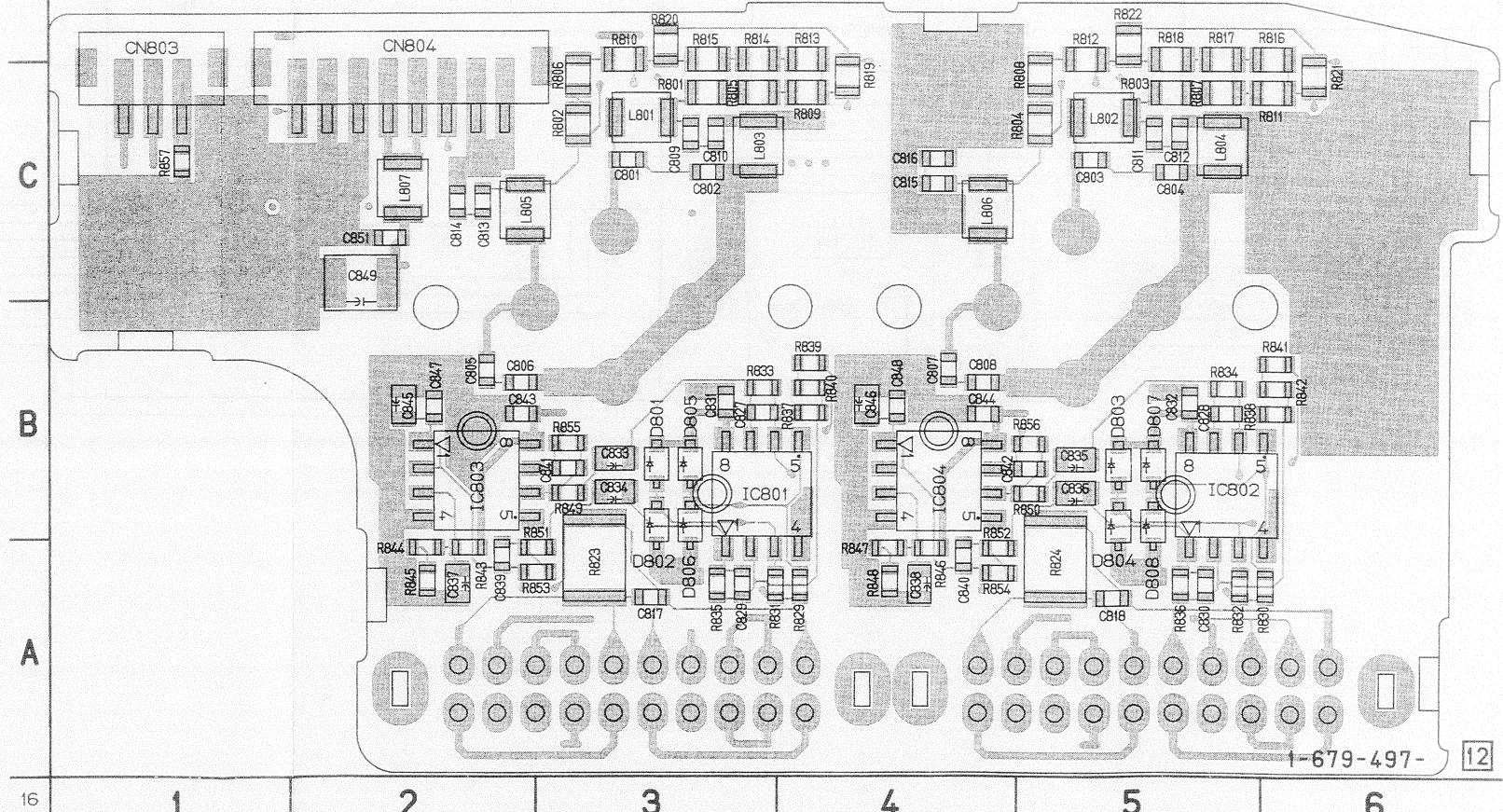




XL-003 (CH1/CH2 MIC AMP) PRINTED WIRING BOARD
— Ref. No. XL-003 Board: 1,000 Series —
XL-003 BOARD (SIDE A)



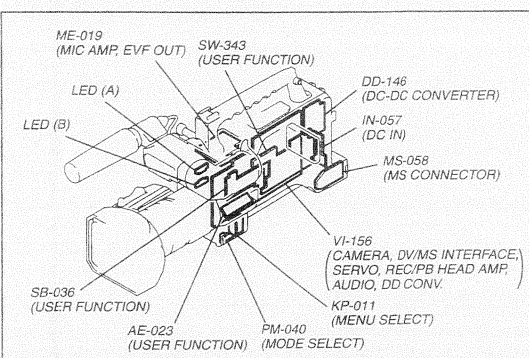
XL-003 BOARD (SIDE B)

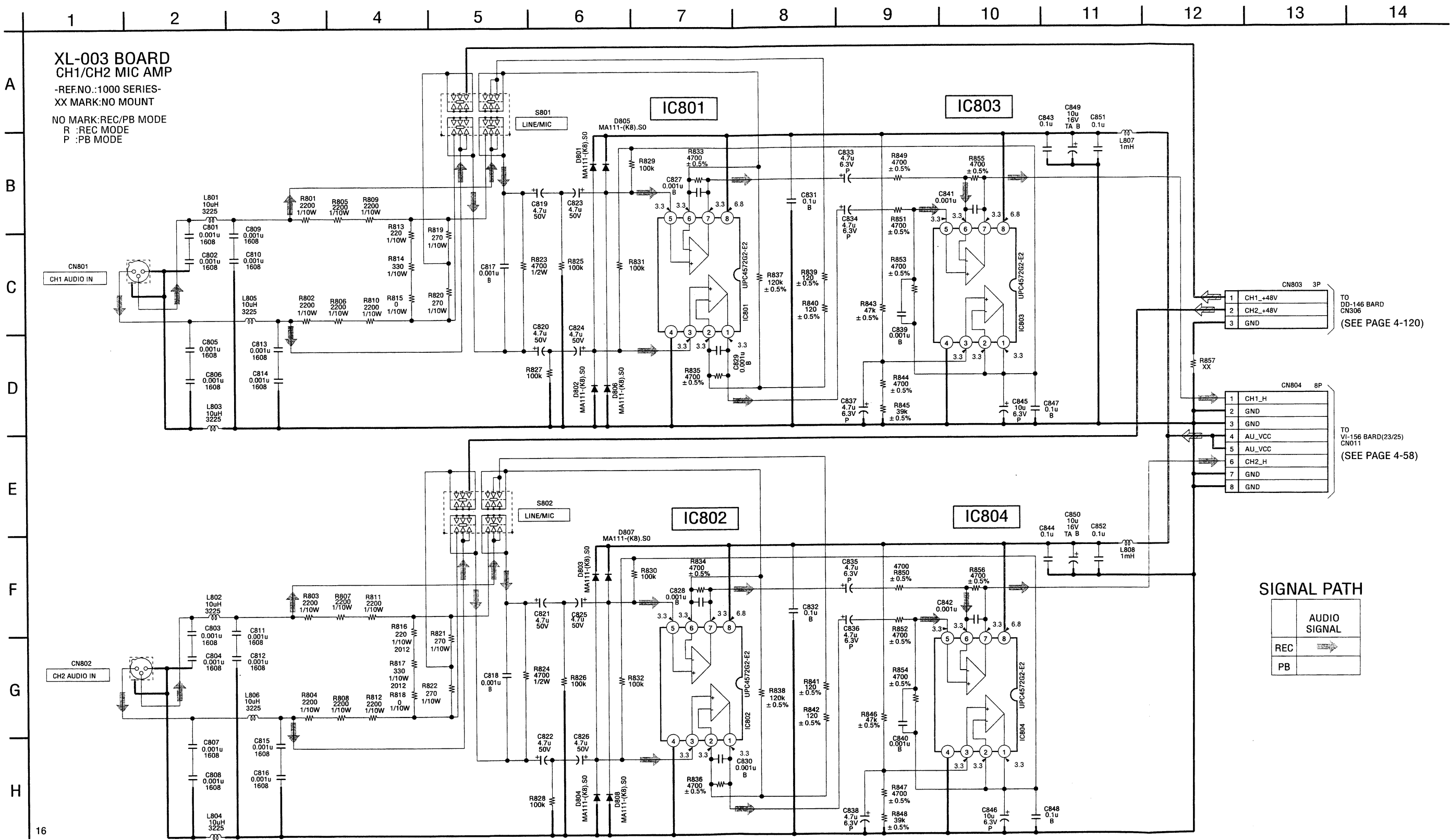


For printed wiring board

- Refer to page 4-131 for parts location.
- XL-003 board consists of multiple layers. However, only the sides (layers) A and B are shown.

There are few cases that the part printed on this diagram isn't mounted in this model.

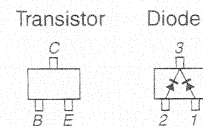




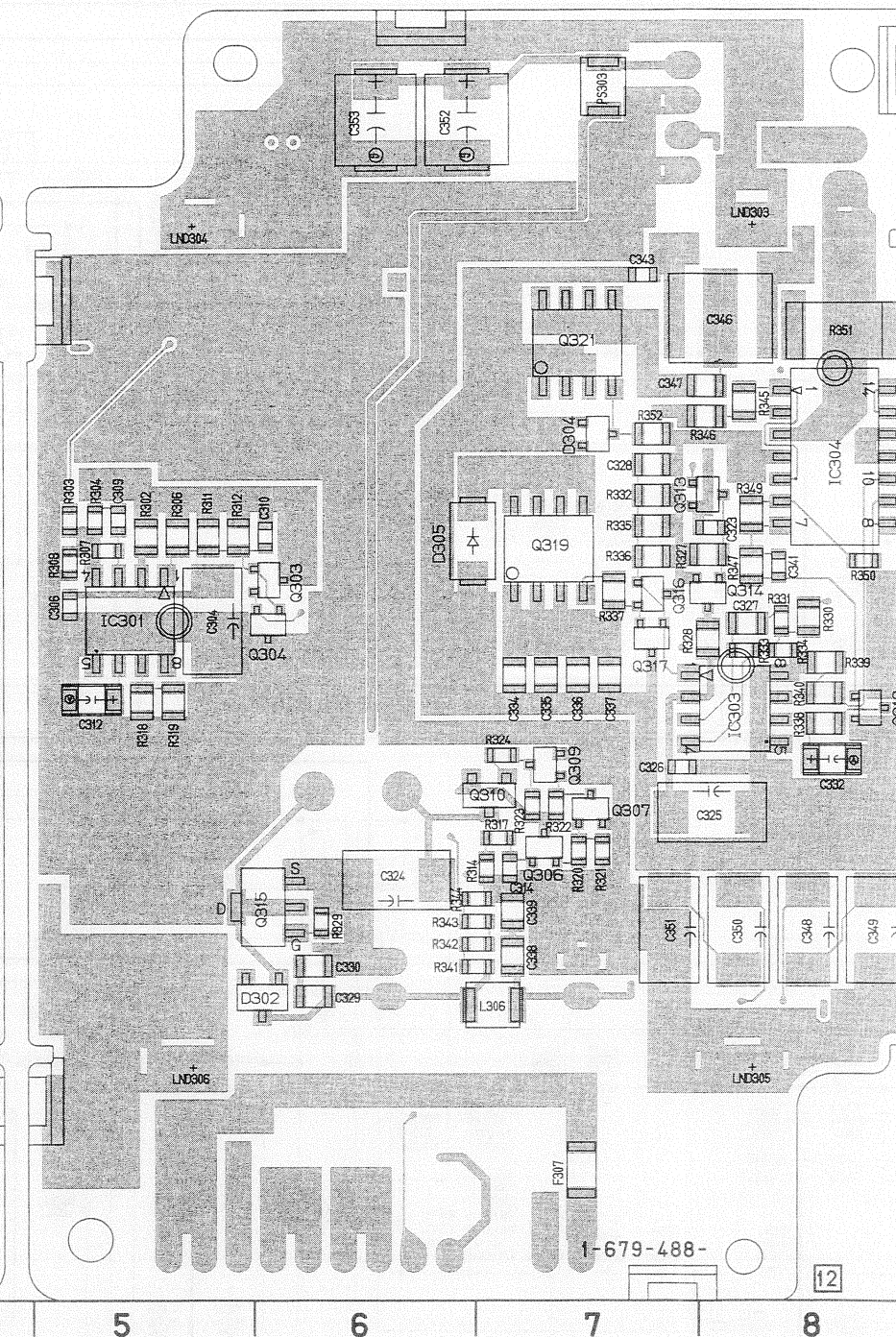
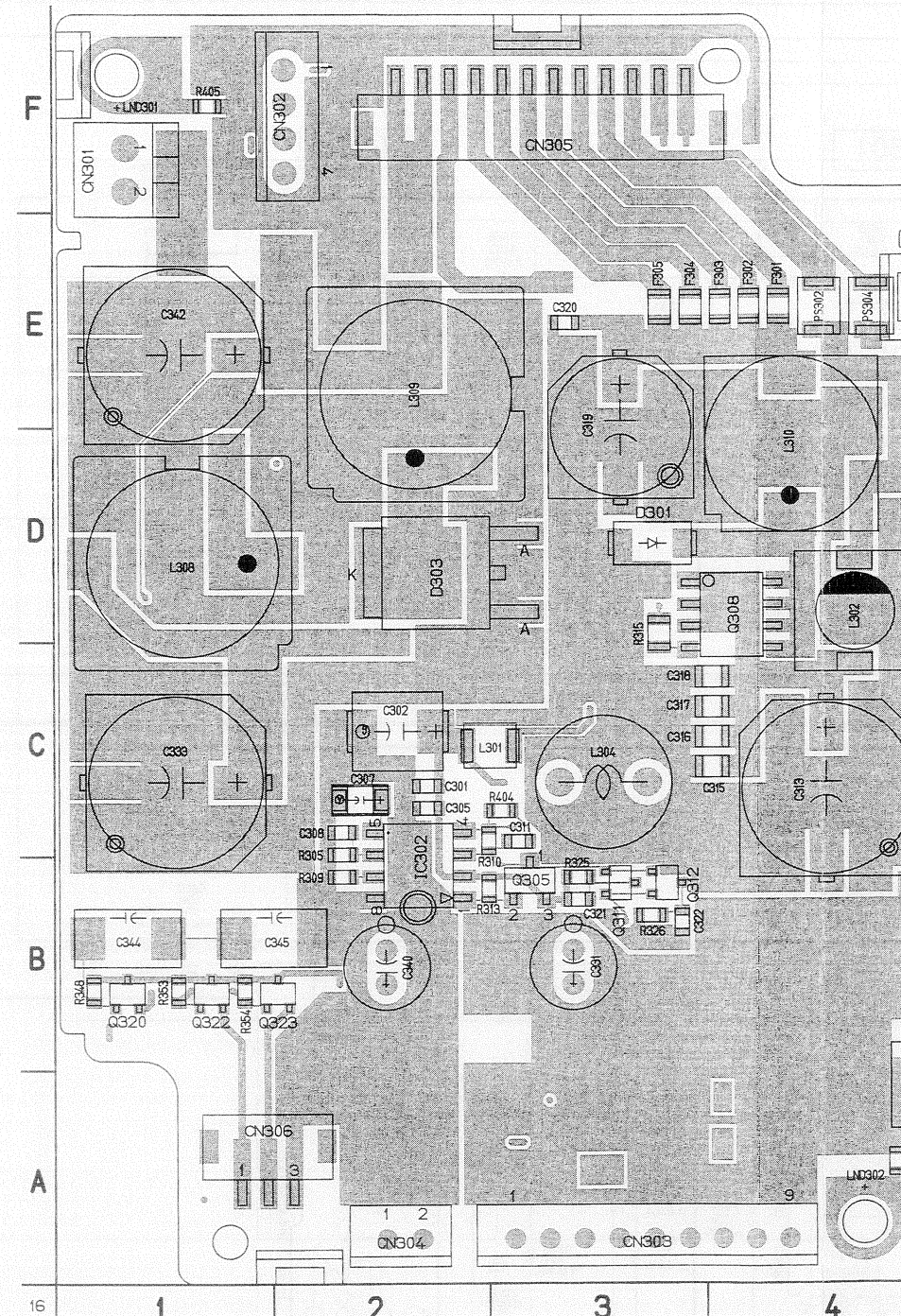
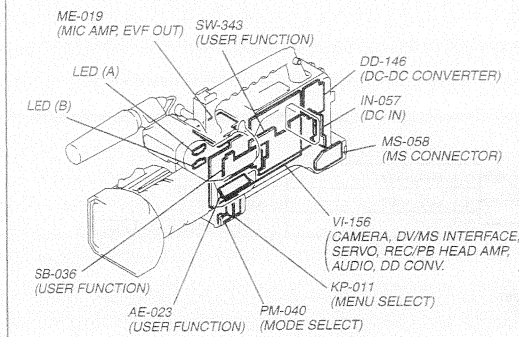
— Ref. No. DD-146, DC-095 Boards; 1,000 Series —

DD-146 BOARD (SIDE B)

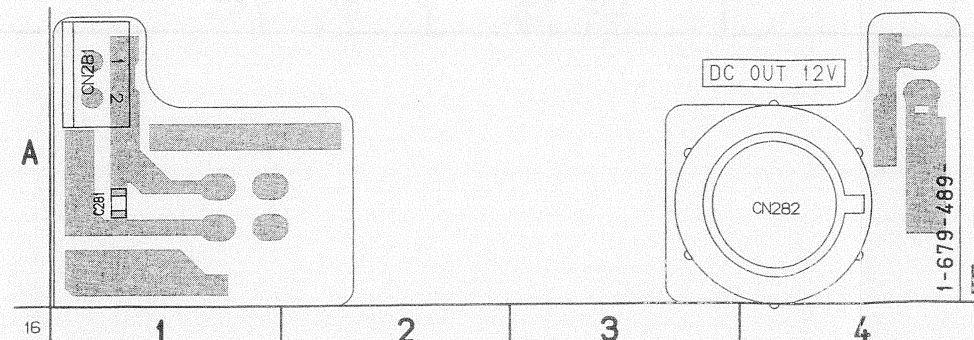
- Refer to page 4-131 for parts location.
- DD-146 board consists of multiple layers. However, only the sides (layers) A and B are shown.
- Chip parts



There are few cases that the part printed on this diagram isn't mounted in this model.

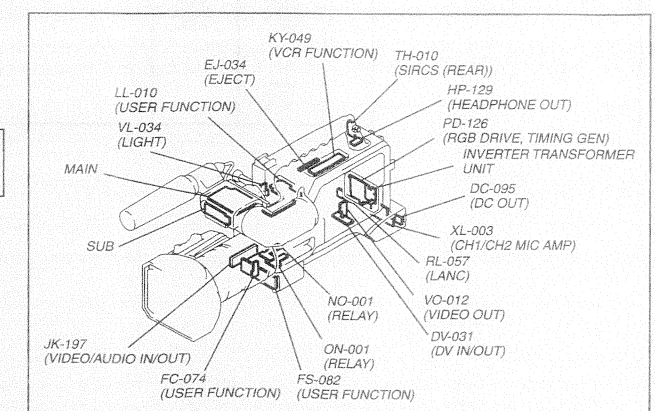


DC-095 BOARD
(SIDE B)



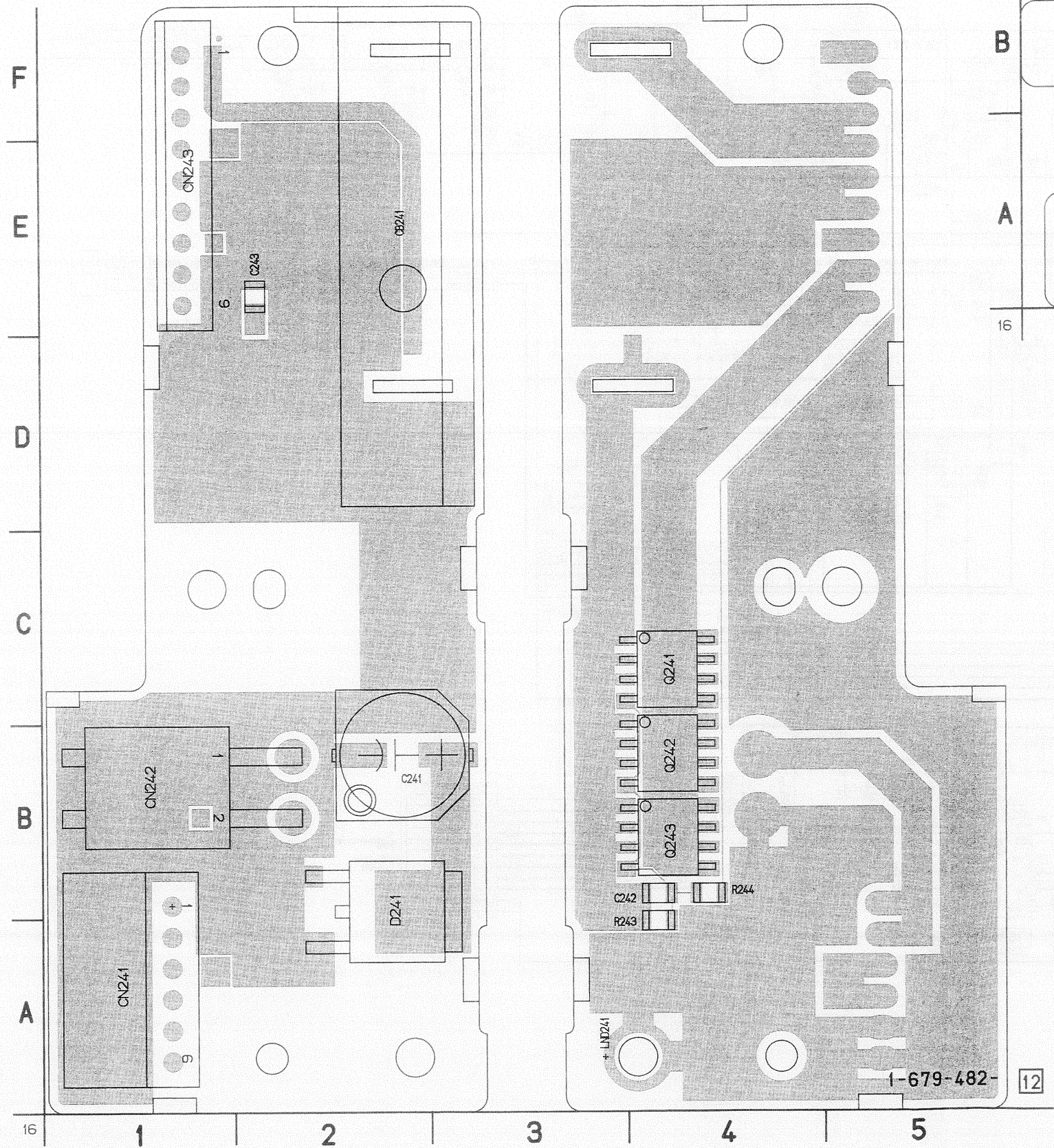
- Refer to page 4-132 for parts location.
- DC-095 board consists of multiple layers. However, only the sides (layers) A and B are shown.

There are few cases that the part printed on this diagram isn't mounted in this model.

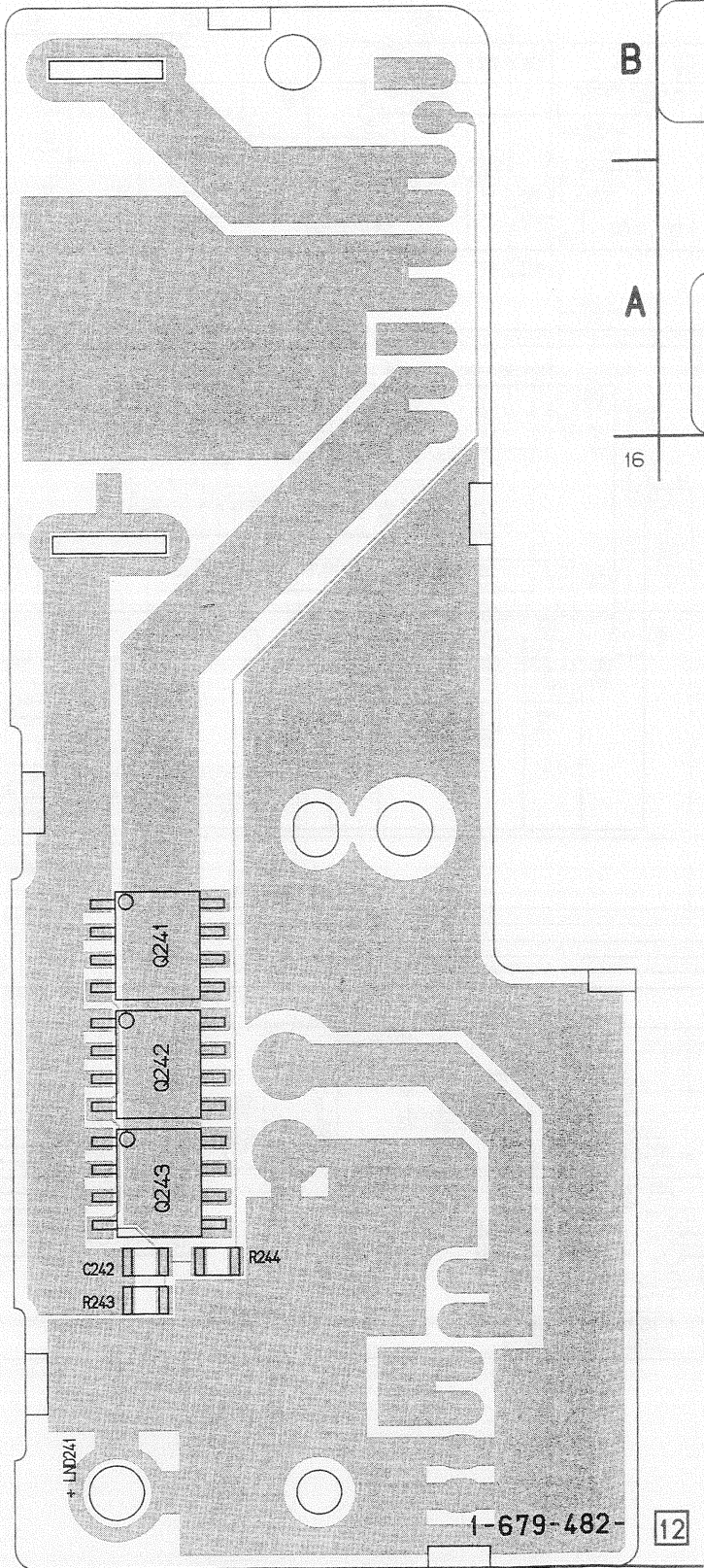


IN-057 (DC IN), VL-034 (LIGHT) PRINTED WIRING BOARDS
— Ref. No. IN-057, VL-034 Boards; 1,000 Series —

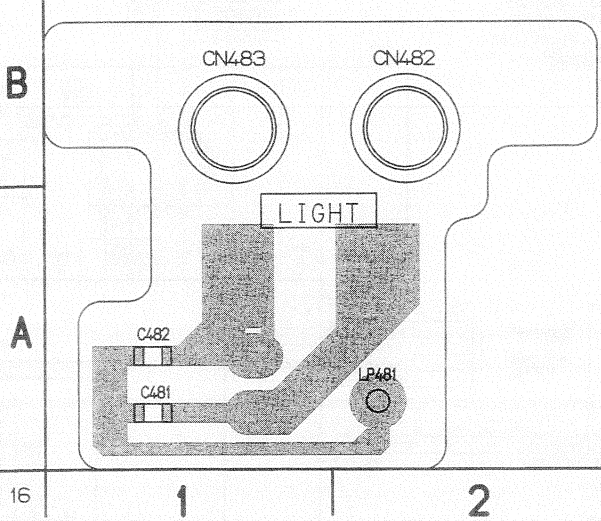
IN-057 BOARD
(SIDE A)



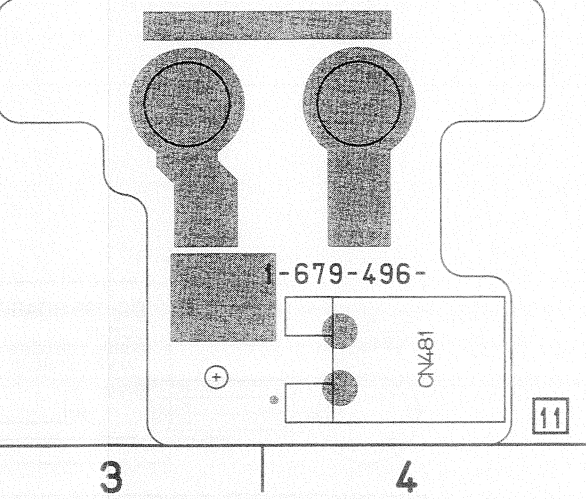
IN-057 BOARD
(SIDE B)



VL-034 BOARD
(SIDE A)



VL-034 BOARD
(SIDE B)

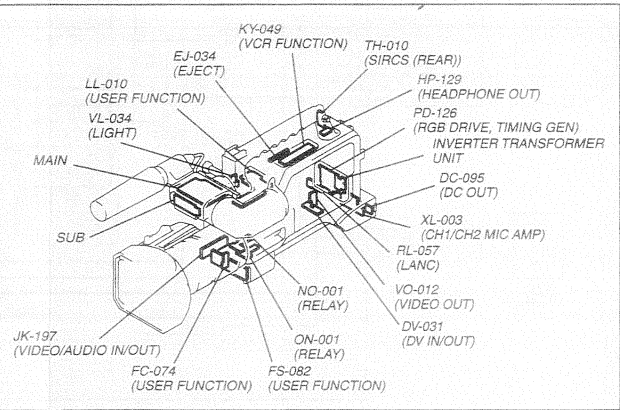
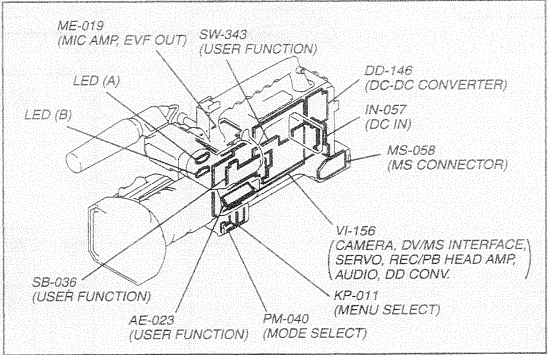


- For printed wiring board**
- Refer to page 4-132 for parts location.
 - IN-057, VL-034 boards consists of multiple layers. However, only the sides (layers) A and B are shown.
 - Chip parts (IN-057 only)

Diode

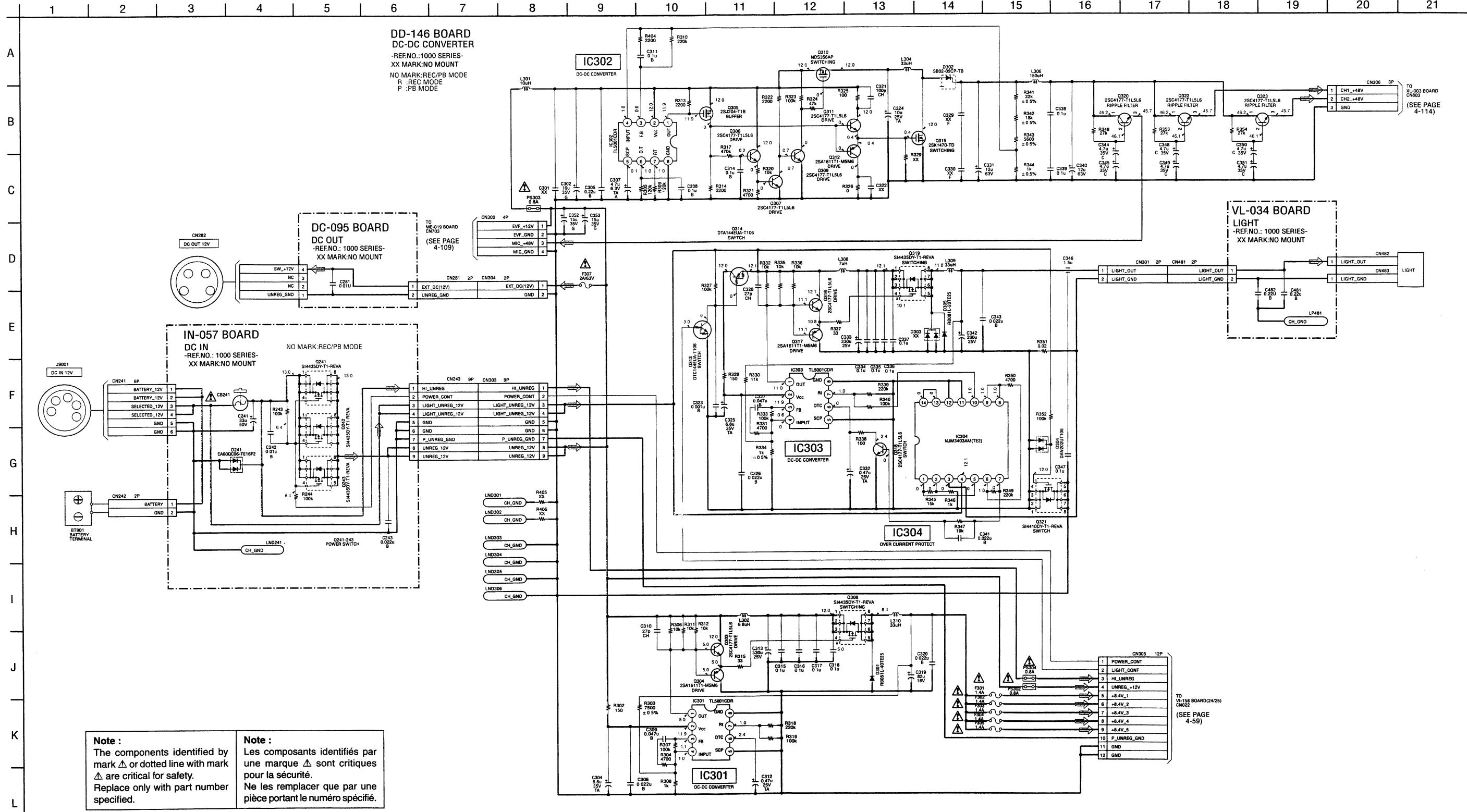


There are few cases that the part printed on this diagram isn't mounted in this model.

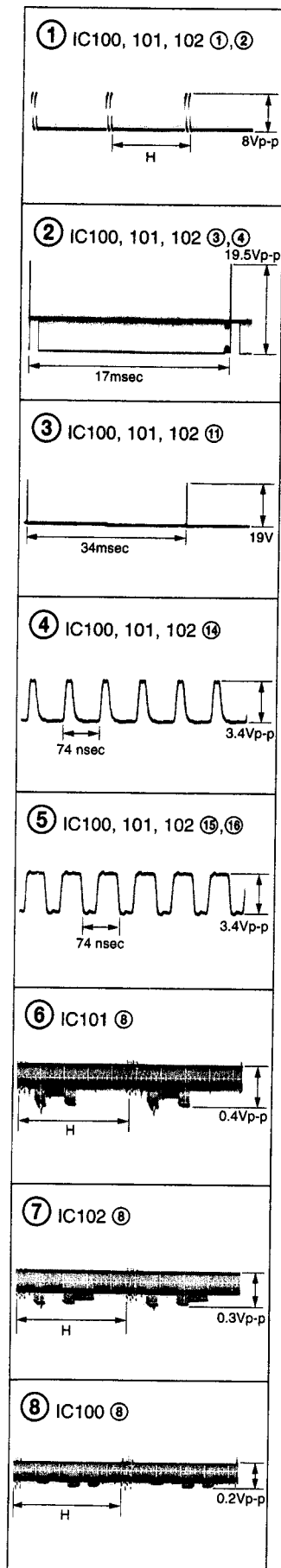
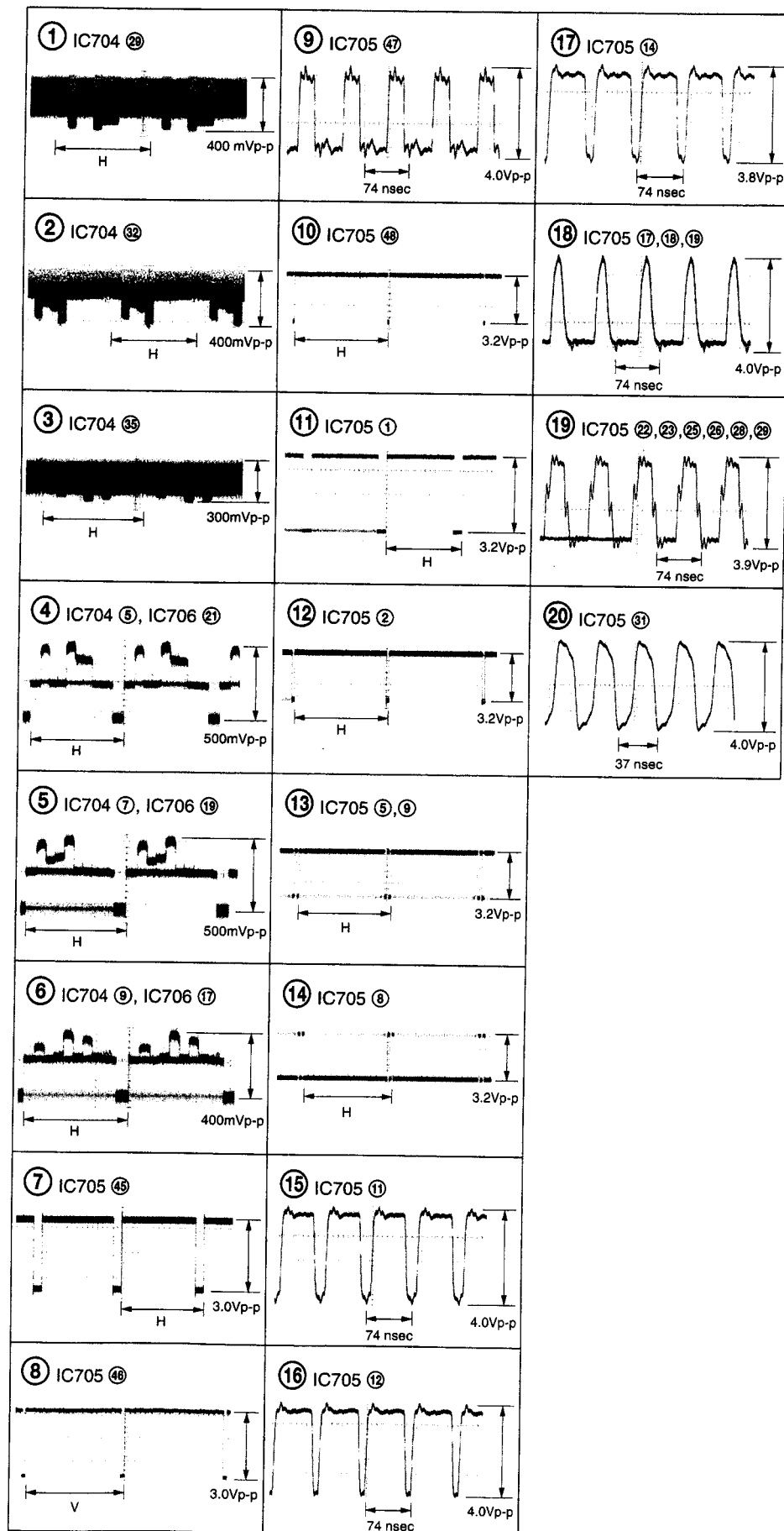


For Schematic Diagram

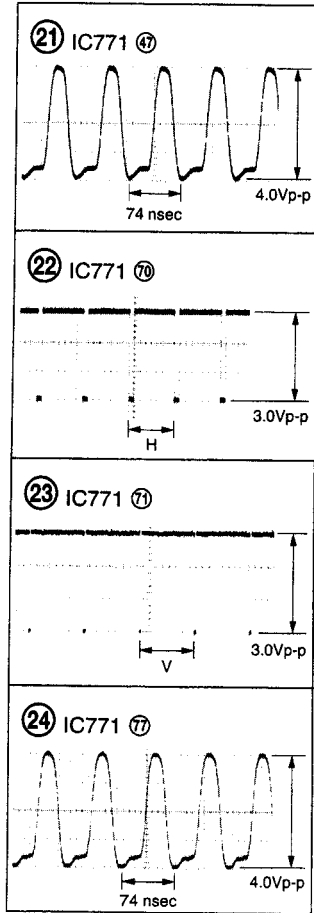
- Refer to page 4-115 for DD-146, DC-095 printed wiring boards.
- Refer to page 4-117 for IN-057 printed wiring board.
- Refer to page 4-118 for VL-034 printed wiring board.



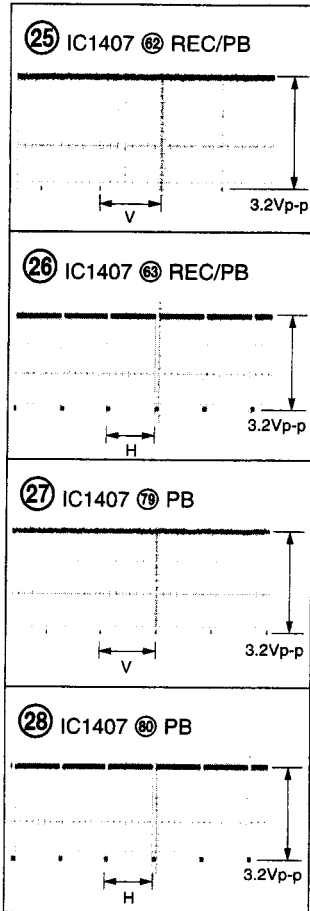
4-3. WAVEFORMS

CD-274 BOARD
RECVI-156 BOARD (1/25)
REC

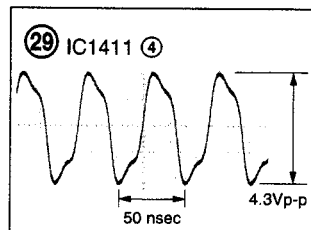
VI-156 BOARD (2/25)
REC/PB



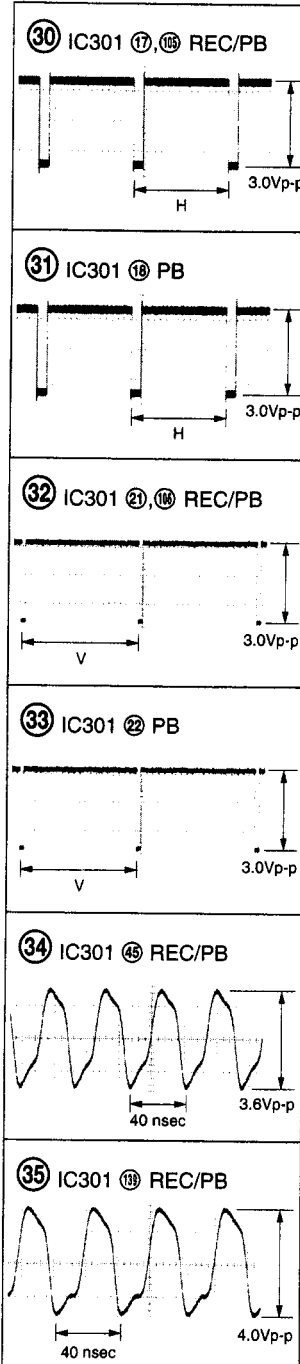
VI-156 BOARD (3/25)



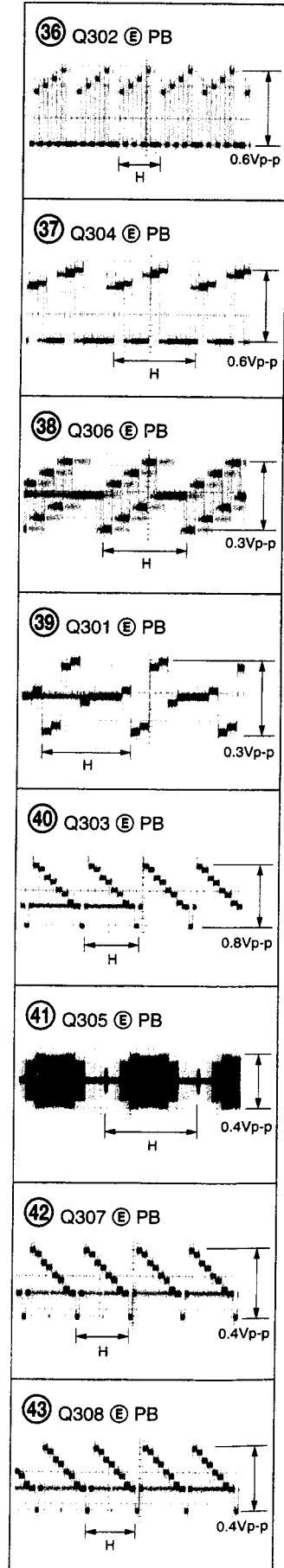
VI-156 BOARD (4/25)
REC/PB

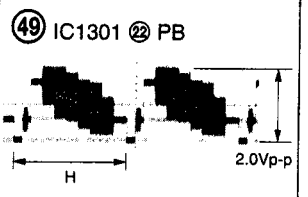
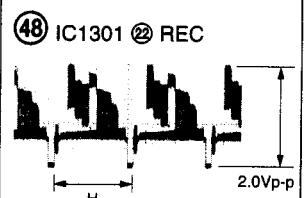
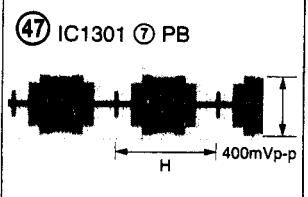
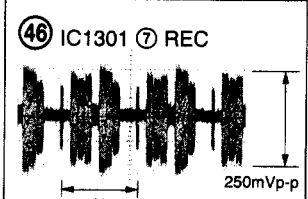
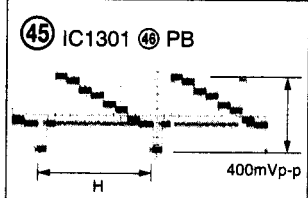
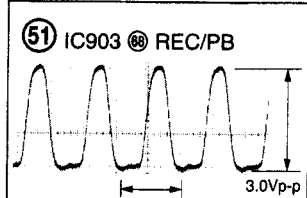
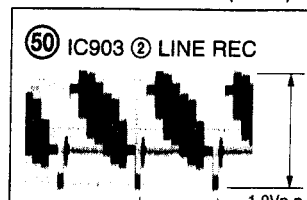
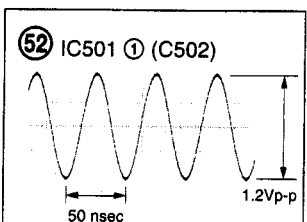
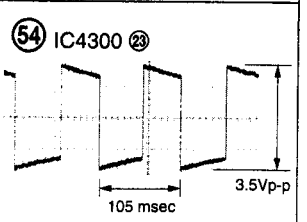
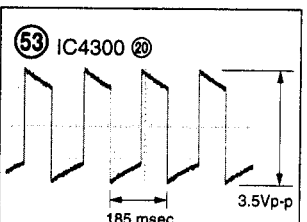
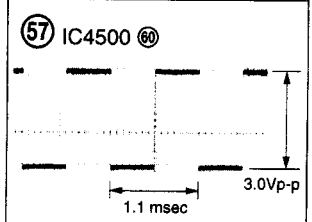
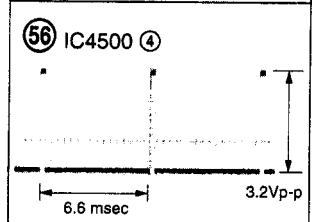
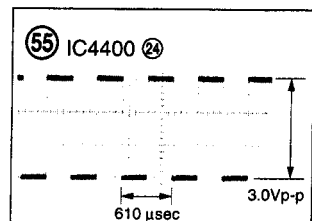
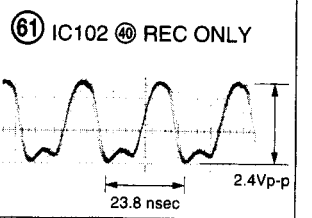
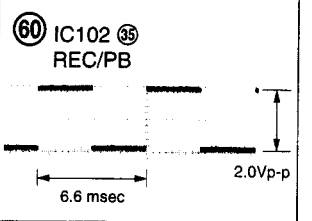
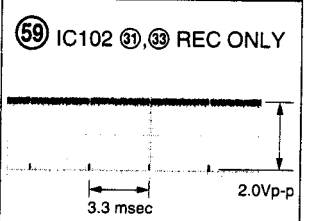
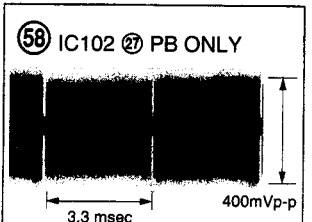
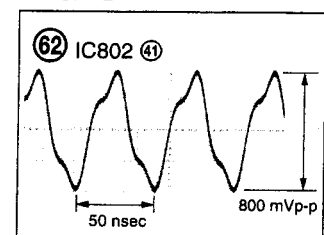
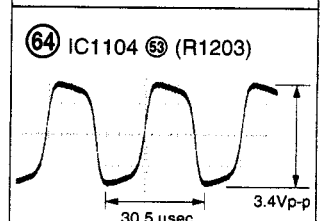
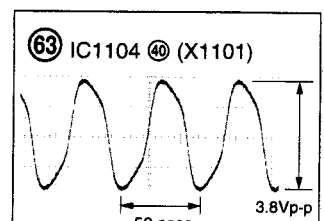


VI-156 BOARD (5/25)

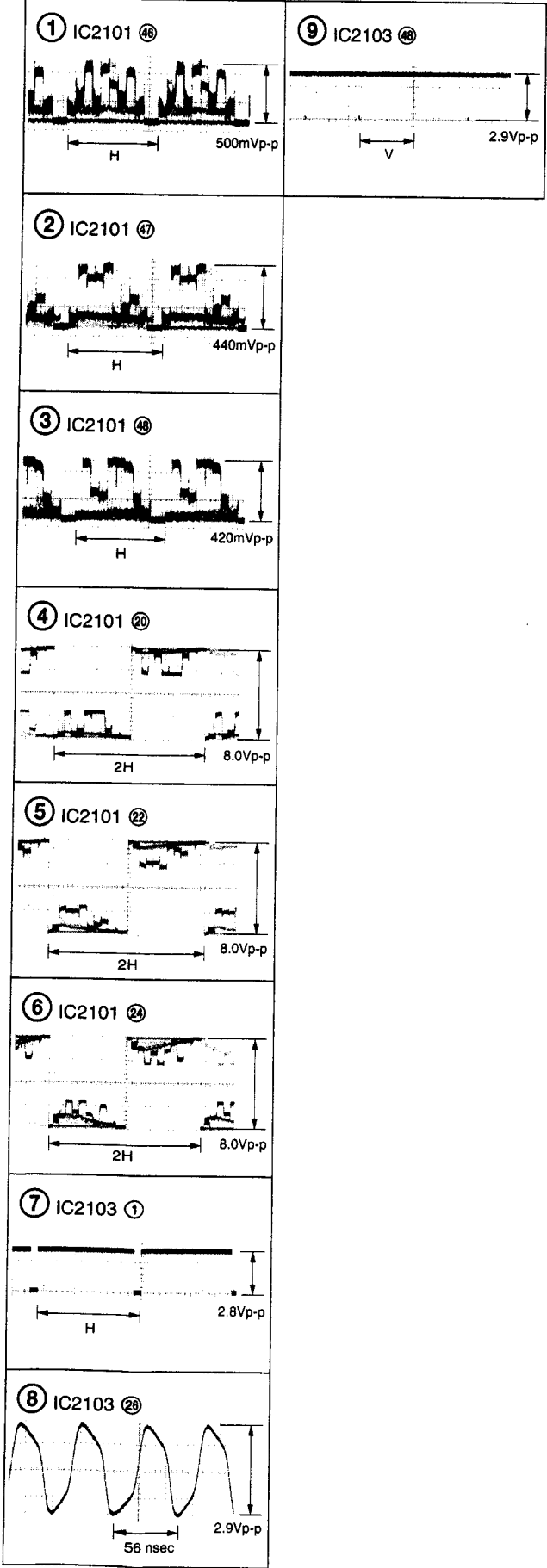


VI-156 BOARD (6/25)



VI-156 BOARD (7/25)**VI-156 BOARD (8/25)****VI-156 BOARD (9/25)**
REC/PB**VI-156 BOARD (10/25)**
REC/PB**VI-156 BOARD (11/25)**
REC/PB**VI-156 BOARD (12/25)****VI-156 BOARD (13/25)**
REC/PB**VI-156 BOARD (17/25)**
REC/PB

PD-126 BOARD
REC/PB



4-4. MOUNTED PARTS LOCATION

CD-274 BOARD (SIDE A)

C100	G-1	IC103	G-2
C101	D-1	IC104	D-2
C102	G-1	IC105	A-2
C103	D-1		
C104	G-1	L100	G-1
C105	D-1	L101	D-1
C108	A-1	L104	D-2
C109	A-1	L105	A-1
C110	A-1	L106	G-2
C111	A-1	L107	A-2
C112	G-1		
C113	G-1	R100	G-1
C114	D-1	R101	G-1
C115	D-1	R102	D-1
C117	G-1	R103	D-1
C118	D-1	R104	A-1
C119	A-1	R105	A-1
C120	A-2	R106	G-2
C130	G-1	R107	D-2
C131	G-1	R108	D-2
C132	D-1	R109	G-2
C133	D-1	R110	A-2
C134	A-1	R111	A-2
C135	A-1	R112	G-2
		R113	E-1
		R114	A-1
CN100	D-4		

CD-274 BOARD (SIDE B)

IC100	A-7
IC101	G-7
IC102	D-7

VI-156 BOARD (SIDE A)

C102	C-12	C1080	I-7	C2506	I-9	CN011	E-15	IC2775	B-3	Q3332	H-11
C103	C-12	C1081	I-8	C2507	I-10	CN012	I-12	IC2776	B-3	Q3333	H-11
C104	C-11	C1082	H-7	C2508	I-10	CN013	I-11	IC4400	B-14	Q3334	H-11
C105	B-12	C1107	F-4	C2509	H-10	CN014	I-9	IC4501	B-13	Q3335	H-11
C106	B-12	C1108	F-5	C2770	A-3	CN015	I-7			Q3337	H-11
C107	B-12	C1109	D-5	C2776	A-3	CN016	G-4	JR4501	A-13	Q3338	H-11
C108	B-11	C1110	D-5	C2778	B-4	CN017	G-5	JR4503	A-12	Q3344	I-11
C110	B-11	C1111	E-5	C2779	B-4	CN018	E-1	JR4505	B-13	Q3345	H-11
C111	B-11	C1112	E-5	C2781	A-3	CN019	E-1			Q3348	I-11
C112	B-12	C1113	E-5	C2782	A-3	CN020	B-1	JS001	A-1	Q3349	I-11
C113	B-12	C1114	E-5	C2783	B-3	CN021	H-6	JS002	A-1	Q3351	I-11
C114	B-11	C1115	E-5	C2784	B-3	CN022	I-13			Q4200	B-9
C115	B-11	C1116	E-5	C2785	B-3	CN025	C-1	L101	B-12	Q4201	C-8
C116	B-12	C1117	E-5	C2786	B-3	CN101	A-11	L102	B-12	Q4302	B-10
C117	B-11	C1119	E-5	C2787	B-3	CN200	A-8	L130	A-5	Q4501	A-8
C118	B-12	C1120	E-6	C2788	B-3	CN201	A-10	L140	B-1		
C119	B-11	C1121	E-5	C2789	B-3	CN400	A-15	L1001	I-7	R001	F-1
C143	A-1	C1122	F-7	C2790	B-3	CN500	A-13	L1073	H-9	R002	E-1
C152	A-2	C1128	F-6	C2791	B-3	CN501	A-12	L1303	C-5	R003	E-1
C154	B-1	C1129	F-6	C2792	B-3	CN4300	A-11	L701	D-2	R004	E-1
C160	B-2	C1130	F-6	C2793	B-3			L2770	B-4	R007	A-6
C161	C-2	C1131	F-5	C2794	B-3	D001	H-7	L2774	A-3	R008	G-4
C163	A-2	C1132	F-5	C2800	A-3	D702	C-1	L3302	F-12	R103	C-12
C171	A-2	C1301	A-4	C2821	A-3	D1401	C-15	L3303	F-11	R104	C-12
C172	A-2	C1302	A-5	C3322	G-12	D3305	G-12	L3304	F-11	R105	B-11
C173	A-2	C1304	B-4	C3323	G-12	D3306	G-12	L3305	F-12	R106	B-11
C174	A-2	C1305	B-4	C3324	G-12	D3307	G-12	L3318	I-11	R107	B-12
C334	C-8	C1306	B-4	C3326	G-12	D3308	H-12	L3320	H-11	R108	B-12
C512	C-8	C1307	B-5	C3346	G-10	D3309	G-11	L3452	H-12	R109	B-11
C513	C-8	C1308	B-4	C3347	G-10	D3310	G-11	L4100	H-14	R110	B-12
C514	C-8	C1309	B-4	C3349	G-10	D3311	G-11	L4101	H-14	R112	B-12
C515	B-8	C1310	B-4	C3350	H-10	D3312	G-11	L4102	F-14	R125	B-12
C516	B-8	C1311	B-4	C3365	H-12			L4103	G-14	R126	B-12
C707	D-1	C1313	A-5	C3366	H-10	FB101	C-11	L4104	H-13	R127	B-11
C709	D-1	C1314	B-5	C3370	I-12	FB140	A-1	L4105	H-13	R171	A-2
C710	C-1	C1315	B-5	C3371	H-10	FB701	D-1	L4106	F-13	R172	A-2
C711	D-2	C1316	B-5	C3374	H-12	FB702	D-1	L4107	G-13	R173	A-2
C713	D-1	C1318	B-5	C3375	H-10	FB771	D-2	L4200	D-9	R174	A-2
C714	C-2	C1319	C-5	C4111	G-15	FB772	D-4	L4400	B-14	R177	B-2
C715	E-1	C1320	C-5	C4117	C-14	FB1002	I-7			R178	B-2
C718	C-1	C1321	B-5	C4118	H-14	FB1101	F-4	Q004	A-6	R179	B-2
C761	D-2	C1322	B-5	C4119	H-14	FB1301	A-6	Q102	C-12	R180	B-2
C762	C-2	C1323	B-5	C4200	B-9	FB1402	C-10	Q701	D-1	R181	B-2
C763	D-1	C1328	B-5	C4201	C-9	FB1404	E-9	Q702	D-1	R182	B-2
C771	D-2	C1329	B-5	C4202	C-9	FB1405	E-14	Q801	F-1	R185	B-2
C772	D-4	C1330	B-6	C4203	C-9	FB1406	E-11	Q1001	G-7	R186	B-2
C803	F-3	C1337	B-5	C4204	D-9	FB1407	E-14	Q1002	H-9	R224	C-8
C805	F-3	C1338	B-5	C4205	D-9	FB1410	C-15	Q1003	G-7	R701	C-1
C806	F-4	C1340	B-6	C4206	D-9	FB1411	C-15	Q1004	G-7	R702	D-1
C807	F-3	C1341	B-6	C4207	C-9	FB1412	B-15	Q1005	I-9	R703	D-1
C808	F-3	C1342	B-6	C4300	B-10	FB1413	B-15	Q1007	H-7	R771	D-3
C809	G-3	C1343	B-5	C4301	B-10			Q1008	G-7	R772	C-4
C1002	G-7	C1408	C-10	C4323	A-10	IC101	B-11	Q1010	G-7	R773	C-4
C1003	H-9	C1409	D-8	C4324	A-10	IC140	A-1	Q1011	I-7	R801	E-2
C1005	H-9	C1413	D-12	C4325	A-11	IC143	B-2	Q1014	H-7	R802	E-1
C1006	I-9	C1414	E-9	C4326	B-10	IC144	B-2	Q1015	G-7	R812	E-2
C1007	H-9	C1416	E-9	C4327	A-10	IC302	D-8	Q1016	H-7	R813	E-2
C1008	H-9	C1417	D-12	C4329	B-10	IC701	D-2	Q1113	E-6	R814	E-2
C1009	H-9	C1418	E-14	C4330	A-10	IC702	C-2	Q1301	A-4	R818	E-2
C1010	H-9	C1419	E-11	C4331	B-10	IC771	C-3	Q1302	A-6	R820	E-3
C1011	H-9	C1420	C-14	C4400	B-14	IC801	E-2	Q1303	A-5	R826	F-3
C1013	H-9	C1421	C-14	C4401	B-15	IC802	F-2	Q1304	A-5	R827	F-3
C1014	I-8	C1422	D-14	C4402	B-15	IC1001	H-8	Q1305	A-5	R828	F-3
C1015	I-8	C1423	D-14	C4403	B-15	IC1003	G-7	Q1306	B-4	R829	F-3
C1016	I-8	C1425	C-14	C4404	B-15	IC1104	E-5	Q1404	C-15	R830	F-4
C1017	I-8	C1601	G-8	C4405	B-15	IC1105	F-6	Q1405	C-15	R831	F-3
C1018	I-8	C1603	G-8	C4406	B-14	IC1301	B-5	Q1601	G-8	R832	F-3
C1019	I-8	C1604	G-9	C4407	B-14	IC1403	D-10	Q1602	G-9	R833	E-3
C1020	I-8	C1605	G-8	C4519	C-13	IC1405	D-12	Q2502	A-15	R835	F-4
C1021	H-7	C1606	G-9	C4520	C-13	IC1407	E-8	Q2770	A-4	R836	G-3
C1022	H-8	C1607	G-8	C4521	B-14	IC1409	E-12	Q2771	A-4	R837	F-3
C1023	H-8	C1608	G-9	C4522	B-14	IC1410	D-14	Q2772	A-3	R839	F-3
C1024	H-8	C1611	G-10	C4523	A-14	IC1411	C-14	Q2773	B-3	R840	F-3
C1025	H-7	C1612	H-10	C4524	C-13	IC1413	D-13	Q2774	C-3	R841	F-3
C1026	I-8	C1615	G-10	C4525	B-13	IC1601	G-8	Q2775	A-3	R842	G-3
C1027	H-8	C1616	H-10			IC1602	G-9	Q2776	B-4	R853	F-3
C1028	H-7	C1619	G-6	CN001	A-2	IC1603	G-8	Q2777	A-3	R1001	I-9
C1029	H-8	C162	B-2	CN002	A-3	IC1604	G-9	Q2778	C-3	R1002	H-7
C1034	H-7	C1620	H-6	CN004	A-4	IC1607	G-9	Q3305	G-12	R1003	H-9
C1035	H-8	C1621	G-6	CN005	A-5	IC1608	H-9	Q3306	H-12	R1004	I-9
C1039	H-7	C1623	G-6	CN006	A-15	IC1611	G-7	Q3307	H-12	R1005	I-9
C1041	G-8	C1624	H-6	CN007	A-7	IC1612	H-7	Q3308	G-11	R1006	H-7
C1042	H-9	C1625	H-8	CN008	A-15	IC2501	H-9	Q3325	H-11	R1007	H-9
C1044	G-7	C1626	H-8	CN009	B-15	IC2502	H-10	Q3327	H-11	R1008	I-9
C1045	H-7	C2505	I-9	CN010	D-15	IC2772	B-4	Q3331	I-11	R1010	G-7

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R1011 H-8	R1203 F-6	R1619 G-8	R3362 H-11	C051 I-24	C508 C-23	C1048 G-24	C2210 B-30
R1015 H-7	R1207 F-6	R1620 G-9	R3365 H-11	C052 H-24	C509 B-25	C1049 G-23	C2211 B-29
R1016 H-9	R1208 F-5	R1621 G-8	R3367 H-11	C053 H-24	C510 C-25	C1050 G-23	C2212 B-30
R1018 H-7	R1209 F-5	R1622 G-9	R3369 H-11	C054 H-24	C511 B-24	C1051 G-23	C2213 B-29
R1020 I-7	R1210 F-5	R1629 G-10	R3370 I-11	C109 B-20	C701 C-30	C1052 H-23	C2214 B-30
R1021 H-9	R1211 F-5	R1630 H-10	R3371 I-11	C120 B-20	C702 C-30	C1053 H-22	C2215 B-30
R1022 I-9	R1214 F-5	R1631 G-10	R3372 H-11	C121 B-20	C703 C-30	C1054 H-23	C2501 A-16
R1023 H-9	R1216 F-5	R1632 H-10	R3373 H-11	C122 B-20	C704 C-30	C1055 H-22	C2502 A-16
R1024 H-9	R1217 F-5	R1633 G-10	R3374 H-11	C123 B-20	C705 C-30	C1056 G-23	C2503 A-17
R1025 I-8	R1218 F-6	R1634 H-10	R3376 H-11	C124 B-19	C706 C-30	C1058 G-23	C2504 A-17
R1026 I-8	R1220 F-5	R1635 G-10	R3378 I-11	C125 A-20	C708 C-29	C1060 H-24	C2512 A-16
R1027 I-8	R1222 F-5	R1636 H-10	R3381 H-11	C126 B-20	C712 C-29	C1061 G-24	C2513 B-16
R1028 G-7	R1223 F-5	R1639 G-10	R3388 H-11	C127 A-19	C716 C-29	C1062 H-24	C2771 B-28
R1031 H-7	R1224 F-5	R1640 H-10	R3389 H-11	C128 A-19	C717 C-29	C1065 H-21	C2772 B-28
R1032 H-7	R1229 E-5	R1647 G-6	R3390 H-11	C140 A-29	C719 C-29	C1066 G-21	C2773 B-28
R1033 G-7	R1233 F-7	R1648 G-6	R3395 G-10	C141 A-29	C720 B-29	C1067 G-22	C2774 B-27
R1034 G-8	R1234 F-7	R1649 G-6	R3396 G-10	C142 A-29	C721 B-29	C1068 G-21	C2775 A-28
R1035 H-7	R1235 F-4	R1650 H-6	R3398 G-10	C144 A-28	C722 C-29	C1069 G-22	C2777 A-27
R1036 G-7	R1236 F-4	R1651 G-6	R3399 I-12	C145 A-28	C723 C-29	C1070 G-21	C2780 B-27
R1037 G-7	R1237 F-5	R1652 H-6	R3405 I-11	C146 A-29	C724 B-29	C1071 H-21	C2796 A-28
R1038 G-7	R1238 F-5	R1653 G-6	R3406 H-11	C147 B-29	C725 C-29	C1072 H-21	C2797 A-28
R1040 H-7	R1301 A-4	R1654 G-6	R3407 H-11	C148 B-29	C726 B-29	C1073 G-21	C2798 A-28
R1041 H-7	R1302 A-4	R1657 G-6	R3408 I-15	C149 B-29	C727 E-30	C1074 G-21	C2799 A-28
R1052 H-8	R1304 A-5	R1658 H-6	R3409 I-6	C150 B-28	C728 E-30	C1075 G-22	C3301 H-19
R1053 H-7	R1305 A-5	R1660 H-9	R3410 G-1	C151 B-28	C729 E-30	C1076 G-22	C3302 H-19
R1054 I-8	R1306 A-5	R1661 H-9	R3411 D-1	C153 B-28	C732 C-29	C1077 G-24	C3303 H-19
R1055 I-8	R1307 A-5	R1662 H-9	R3412 A-1	C155 A-29	C733 C-29	C1078 H-24	C3306 I-21
R1056 H-7	R1308 A-5	R1663 H-9	R3413 A-6	C156 B-28	C734 C-29	C1083 I-23	C3307 H-19
R1057 H-7	R1312 A-5	R1664 G-8	R3415 A-15	C157 A-29	C735 E-30	C1084 H-23	C3308 I-18
R1058 H-7	R1313 A-5	R1665 G-9	R4106 G-15	C158 B-28	C736 C-29	C1085 H-23	C3309 H-19
R1108 E-7	R1314 A-5	R1666 G-10	R4201 B-9	C159 B-28	C737 C-30	C1086 H-23	C3310 I-18
R1116 D-6	R1315 A-5	R1667 G-10	R4202 B-8	C166 A-27	C740 E-29	C1087 H-23	C3311 G-20
R1117 D-6	R1316 A-5	R1668 G-6	R4203 B-9	C170 B-28	C743 E-29	C1088 I-22	C3312 G-19
R1118 D-6	R1317 A-5	R1669 H-6	R4205 C-10	C301 D-24	C744 E-29	C1089 I-21	C3313 I-18
R1119 D-6	R1318 B-5	R2508 H-9	R4206 C-10	C302 F-23	C745 E-29	C1090 H-21	C3314 I-17
R1120 D-6	R1319 B-4	R2509 I-9	R4207 C-10	C303 E-22	C746 C-28	C1091 H-22	C3315 G-20
R1121 D-6	R1320 C-5	R2510 H-9	R4208 C-10	C304 D-16	C747 C-29	C1092 I-22	C3316 I-18
R1122 D-6	R1322 B-5	R2511 H-9	R4209 B-9	C305 F-22	C748 C-29	C1093 I-22	C3317 G-19
R1123 D-6	R1323 C-5	R2517 H-10	R4210 A-10	C306 D-23	C749 C-29	C1094 H-22	C3318 G-19
R1124 D-5	R1324 B-5	R2518 I-10	R4211 C-10	C307 E-22	C750 E-29	C1095 I-22	C3319 G-20
R1126 D-5	R1325 B-5	R2519 H-10	R4223 D-8	C308 E-22	C751 C-28	C1096 H-22	C3320 G-19
R1129 D-6	R1326 B-6	R2520 I-10	R4300 B-10	C309 E-24	C752 C-28	C1097 I-22	C3321 G-20
R1130 D-6	R1327 B-6	R2522 H-10	R4308 B-10	C310 E-22	C753 C-28	C1098 H-21	C3325 G-19
R1131 D-6	R1328 B-6	R2523 H-10	R4310 B-10	C311 E-24	C754 E-28	C1099 I-21	C3327 G-19
R1132 D-6	R1329 B-6	R2784 A-4	R4311 B-10	C312 F-22	C755 E-29	C1100 H-23	C3328 G-20
R1133 D-6	R1330 B-5	R2785 A-4	R4312 B-10	C313 F-22	C757 D-28	C1101 F-27	C3330 G-19
R1134 D-6	R1333 A-4	R2786 B-4	R4323 A-10	C314 F-22	C758 D-28	C1102 F-25	C3332 G-19
R1135 F-5	R1334 B-4	R2787 B-4	R4324 A-10	C315 F-24	C759 C-28	C1103 F-27	C3333 F-18
R1136 F-5	R1335 B-4	R2790 A-3	R4325 A-10	C316 F-24	C760 D-28	C1104 E-25	C3335 F-20
R1138 E-7	R1336 B-4	R2791 A-3	R4326 A-10	C317 F-23	C801 F-28	C1105 F-26	C3336 F-20
R1139 D-7	R1407 E-11	R2792 A-3	R4327 B-10	C318 F-22	C802 F-28	C1106 E-26	C3337 F-19
R1139 E-7	R1413 E-11	R2793 B-3	R4328 A-10	C319 F-22	C810 D-28	C1133 F-26	C3338 G-20
R1139 D-7	R1439 D-12	R2794 A-3	R4329 B-10	C320 F-23	C811 D-28	C1134 F-26	C3339 E-16
R1140 E-5	R1440 D-12	R2795 B-3	R4330 B-10	C321 G-23	C901 B-26	C1312 B-26	C3342 F-20
R1142 E-4	R1441 E-11	R2796 B-3	R4333 A-10	C322 F-22	C902 C-27	C1332 B-26	C3343 F-20
R1144 E-7	R1442 D-11	R2797 B-3	R4334 B-10	C323 F-23	C903 C-26	C1333 B-26	C3344 F-19
R1145 E-7	R1443 D-15	R2798 B-3	R4339 B-10	C324 E-24	C904 C-25	C1344 B-26	C3345 F-19
R1146 E-7	R1445 C-14	R2799 B-3	R4340 B-10	C325 F-25	C908 C-27	C1401 D-18	C3348 G-20
R1147 E-6	R1448 C-14	R2800 B-3	R4400 B-14	C326 E-25	C910 C-25	C1402 C-20	C3351 E-20
R1148 D-4	R1449 C-15	R2801 B-3	R4402 B-15	C327 G-23	C911 C-26	C1403 C-20	C3352 E-20
R1149 D-4	R1451 C-15	R2802 B-3	R4403 B-14	C328 G-23	C912 C-26	C1404 C-20	C3353 E-18
R1150 E-4	R1452 C-15	R2803 B-3	R4405 B-14	C329 C-16	C913 C-26	C1405 C-21	C3354 E-19
R1151 E-4	R1453 C-15	R2804 B-3	R4515 B-12	C331 C-16	C914 C-26	C1406 C-21	C3355 E-18
R1152 E-4	R1454 C-15	R2805 B-3	R4516 B-12	C332 C-16	C915 C-26	C1407 E-18	C3356 E-20
R1153 D-6	R1457 C-15	R2806 A-3	R4532 B-14	C333 D-17	C916 C-26	C1410 E-20	C3357 E-20
R1154 E-4	R1458 C-15	R2807 A-3	R4533 B-14	C337 C-16	C917 C-26	C1411 E-20	C3358 E-20
R1155 E-4	R1459 C-15	R2808 A-3	R4534 B-14	C338 C-16	C918 C-26	C1412 E-18	C3359 E-19
R1156 E-4	R1601 G-8	R2809 A-3	R4535 B-14	C339 G-23	C919 C-26	C1415 E-18	C3360 E-19
R1157 E-4	R1602 G-9	R2810 B-3	R4536 A-8	C340 F-24	C920 C-27	C1424 E-20	C3361 E-19
R1158 F-4	R1603 G-8	R2811 B-3		C341 F-24	C921 C-27	C1426 E-20	C3363 E-19
R1159 F-4	R1604 G-9	R2812 A-3	T3300 G-12	C342 F-24	C922 C-25	C1427 E-20	C3364 H-21
R1176 E-5	R1605 G-8	R2813 B-4	T3301 G-11	C343 F-25	C926 C-27	C1428 E-20	C3368 G-21
R1177 F-5	R1606 G-8	R2814 A-3		C345 F-25	C928 C-27	C1609 H-22	C3373 E-18
R1179 E-7	R1607 G-8	R2815 B-4	X001 C-5	C346 F-22	C929 C-27	C1610 I-21	C3376 I-19
R1180 E-6	R1608 G-9	R2816 B-4	X1101 E-7	C348 F-22	C930 D-27	C1622 G-22	C3377 G-21
R1188 E-4	R1609 H-8	R2817 C-4	X1102 F-6	C352 E-24	C931 D-25	C2200 A-30	C3378 H-20
R1189 F-5	R1610 H-9	R2818 A-3	X1402 C-14	C353 G-24	C932 D-25	C2201 A-30	C3450 H-19
R1191 F-7	R1611 G-8	R2819 C-4		C354 F-24	C933 D-25	C2202 B-30	C3451 H-20
R1193 E-7	R1612 G-9	R2820 A-3		C501 C-24	C934 D-26	C2203 B-29	C3452 H-20
R1194 E-7	R1613 G-8	R3346 H-12		C502 C-25	C935 C-25	C2204 A-30	C3453 H-19
R1195 E-7	R1614 G-9	R3347 H-12		C503 C-24	C936 B-26	C2205 A-30	C3454 H-19
R1198 F-5	R1615 G-8	R3355 H-11		C505 B-25	C1037 G-24	C2206 B-30	C3455 H-19
R1199 F-5	R1616 G-9	R3356 H-11		C506 B-25	C1038 G-24	C2207 B-29	C3456 H-19
R1201 F-5	R1617 G-8	R3359 H-11		C507 B-25	C1040 H-24	C2208 B-30	C3457 H-19
R1202 F-5	R1618 G-9	R3360 H-11			C1047 H-24	C2209 B-29	C3458 H-19

C4100	H-17	FB711	E-30	L3308	F-20	R010	A-24	R327	F-24	R722	E-30	R1113	F-25	R2502	A-16	R3454	H-19
C4101	H-17	FB712	E-30	L3309	F-19	R051	I-24	R328	F-23	R723	E-30	R1128	E-25	R2503	A-16	R3455	H-19
C4102	G-17	FB713	E-30	L3310	F-18	R052	I-24	R329	F-24	R724	E-30	R1137	F-26	R2504	A-16	R3456	H-19
C4103	G-17	FB901	D-25	L3311	F-18	R053	I-24	R331	G-23	R725	C-29	R1160	D-27	R2505	A-16	R3457	H-20
C4104	H-17	FB1401	C-20	L3312	F-20	R054	I-24	R332	F-24	R726	C-29	R1161	D-27	R2506	A-17	R4100	G-17
C4105	G-17	FB1403	E-18	L3313	F-19	R055	I-24	R334	F-23	R727	C-29	R1162	E-27	R2507	A-17	R4101	G-17
C4106	G-17			L3314	F-19	R056	I-24	R335	G-24	R730	D-29	R1163	E-27	R2512	I-20	R4102	G-17
C4107	G-17	IC051	I-24	L3315	F-19	R057	I-24	R336	G-23	R731	E-29	R1164	E-27	R2513	I-20	R4103	G-17
C4108	F-17	IC052	H-24	L3316	F-19	R058	I-24	R338	F-24	R732	E-29	R1165	E-27	R2514	I-20	R4104	G-17
C4112	G-17	IC053	H-25	L3319	F-20	R059	H-24	R340	F-23	R733	D-29	R1166	E-27	R2515	I-20	R4105	F-17
C4113	G-17	IC054	H-24	L3451	H-18	R060	H-24	R341	G-24	R735	E-29	R1167	E-27	R2516	I-20	R4107	G-17
C4114	H-17	IC102	A-19	L3453	H-19	R061	H-24	R343	G-23	R736	E-29	R1177	E-27	R2521	A-29	R4108	G-17
C4115	G-17	IC141	B-29	L4500	C-19	R062	H-24	R351	F-24	R750	E-29	R1196	E-26	R2524	G-28	R4109	H-16
C4116	B-21	IC142	B-28			R063	H-25	R356	G-24	R751	E-28	R1197	E-26	R2770	B-28	R4109	G-17
C4129	H-18	IC0301	E-23	LND104	A-20	R064	H-25	R358	F-24	R803	G-29	R1200	E-26	R2772	B-28	R4110	G-17
C4130	G-18	IC361	C-17	LND105	A-19	R065	H-25	R360	G-24	R815	G-29	R1206	E-27	R2773	B-28	R4111	H-17
C4131	F-18	IC501	C-24	LND106	A-19	R066	H-25	R361	C-16	R819	F-28	R1212	E-26	R2774	B-28	R4112	G-17
C4132	G-18	IC502	A-24	LND303	H-16	R067	H-25	R364	C-16	R850	G-28	R1213	E-26	R2775	B-28	R4113	F-17
C4134	H-18	IC503	C-25	LND304	F-21	R068	H-24	R367	C-16	R851	G-28	R1215	E-26	R2776	B-27	R4114	H-17
C4136	F-18	IC504	B-25	LND305	E-17	R113	A-20	R368	C-16	R852	G-29	R1231	E-25	R2777	B-28	R4115	H-17
C4137	F-18	IC704	C-29			R114	A-20	R369	D-16	R904	C-27	R1232	E-26	R2778	B-28	R4116	H-16
C4208	A-21	IC705	E-29	Q140	A-27	R115	A-20	R370	D-16	R907	B-26	R1321	B-26	R2779	B-27	R4117	H-16
C4302	B-21	IC706	C-28	Q141	A-27	R116	A-20	R371	D-16	R908	B-26	R1331	B-26	R2780	B-27	R4118	G-17
C4303	B-21	IC707	E-29	Q142	A-29	R117	A-20	R372	D-16	R909	C-25	R1332	B-26	R2781	B-28	R4119	F-17
C4320	A-21	IC803	D-29	Q143	A-29	R118	A-20	R377	F-22	R911	C-26	R1401	D-19	R2782	B-27	R4120	H-16
C4321	A-21	IC903	C-26	Q301	G-24	R119	A-20	R378	F-25	R912	C-25	R1402	D-19	R2783	B-27	R4121	H-16
C4322	A-21	IC1002	G-24	Q302	G-23	R120	A-19	R379	F-25	R916	C-26	R1403	D-19	R2788	B-27	R4122	H-17
C4501	C-17	IC1002	A-20	Q303	G-24	R121	A-20	R380	E-22	R924	C-27	R1404	E-19	R2789	B-27	R4123	H-17
C4502	B-17	IC1004	G-23	Q304	G-23	R122	A-20	R381	F-22	R930	C-25	R1405	E-20	R3316	G-20	R4124	H-17
C4503	B-17	IC1005	G-22	Q305	G-24	R123	A-19	R382	F-24	R932	C-27	R1406	E-20	R3317	H-19	R4125	H-17
C4504	C-17	IC1006	H-21	Q306	G-23	R124	A-19	R383	D-24	R936	C-27	R1408	E-20	R3318	G-20	R4126	F-17
C4505	B-17	IC1007	G-21	Q307	G-24	R128	A-20	R384	G-24	R949	D-27	R1409	E-20	R3319	G-20	R4127	H-17
C4506	B-17	IC1008	G-22	Q308	G-24	R129	A-20	R385	G-24	R953	C-27	R1410	E-20	R3320	G-19	R4128	G-17
C4507	B-17	IC1085	H-23	Q902	B-25	R140	A-27	R501	C-24	R954	D-25	R1411	E-20	R3321	G-19	R4131	H-17
C4508	B-18	IC1086	H-22	Q903	C-26	R141	A-27	R502	C-24	R955	C-25	R1412	E-20	R3322	G-19	R4134	G-17
C4509	B-18	IC1101	F-27	Q904	C-25	R142	A-29	R503	C-24	R956	B-26	R1414	D-20	R3323	G-19	R4136	G-17
C4510	B-18	IC1102	F-26	Q905	C-25	R143	A-29	R504	C-24	R957	B-26	R1415	D-20	R3324	G-19	R4200	A-22
C4511	B-18	IC1103	E-26	Q906	B-26	R144	A-29	R505	C-24	R958	B-26	R1416	D-20	R3325	G-19	R4204	A-22
C4512	B-18	IC1401	D-19	Q1024	G-21	R145	A-29	R506	C-24	R1009	F-21	R1417	D-20	R3326	H-21	R4212	A-22
C4515	B-19	IC1402	D-20	Q1025	G-21	R146	A-29	R507	C-24	R1012	G-26	R1418	D-20	R3327	G-19	R4301	B-21
C4518	C-18	IC1404	C-20	Q1031	I-21	R147	A-29	R508	C-23	R1049	G-23	R1419	D-20	R3328	G-20	R4302	B-21
C4535	G-18	IC1406	D-18	Q1032	H-21	R148	A-29	R509	C-23	R1050	G-23	R1420	D-20	R3329	G-20	R4304	A-21
		IC1412	E-21	Q1033	I-21	R149	A-29	R510	C-23	R1059	H-21	R1421	D-20	R3330	G-19	R4305	A-21
CN003	A-24	IC2200	B-30	Q1034	H-21	R150	A-28	R511	B-23	R1060	H-21	R1422	D-20	R3331	G-19	R4307	B-21
		IC2770	B-28	Q1101	F-25	R151	B-28	R512	B-23	R1061	G-21	R1423	D-20	R3332	G-20	R4309	B-21
D140	A-29	IC2771	B-27	Q1103	F-25	R152	B-28	R513	B-23	R1062	G-21	R1424	D-20	R3333	G-19	R4313	B-21
D301	F-22	IC2773	B-28	Q1106	E-25	R153	A-28	R514	B-25	R1063	G-21	R1425	D-20	R3334	G-19	R4314	B-21
D302	F-22	IC3300	G-19	Q1107	E-26	R154	A-29	R515	B-25	R1064	G-21	R1426	D-19	R3335	G-19	R4315	B-21
D303	F-25	IC3301	G-20	Q1108	E-26	R155	B-29	R516	B-25	R1066	H-21	R1427	D-19	R3336	G-19	R4316	B-21
D304	F-25	IC3450	H-20	Q1109	E-26	R156	A-29	R517	B-25	R1067	G-21	R1428	D-19	R3337	G-19	R4331	B-21
D701	E-29	IC4100	G-17	Q1112	E-26	R157	B-29	R518	B-25	R1068	G-21	R1429	D-19	R3338	G-19	R4332	B-21
D1104	F-26	IC4200	C-22	Q1401	D-20	R158	B-29	R520	B-24	R1069	G-21	R1430	D-19	R3339	G-19	R4335	A-21
D1106	E-26	IC4202	A-22	Q1402	E-20	R159	B-28	R521	B-24	R1070	H-21	R1431	D-19	R3340	G-19	R4336	A-21
D1112	E-27	IC4300	A-21	Q1403	E-20	R160	B-29	R522	B-24	R1071	G-21	R1432	D-19	R3341	H-19	R4337	A-21
D1113	E-27	IC4500	B-18	Q2200	B-30	R161	B-29	R523	B-24	R1072	G-22	R1433	D-18	R3342	G-20	R4342	A-21
D1114	E-27			Q2201	B-30	R162	B-29	R524	B-24	R1073	H-22	R1434	D-18	R3344	G-20	R4501	C-18
D1115	F-27	L103	B-20	Q2501	A-17	R163	A-29	R525	B-24	R1074	G-22	R1435	D-18	R3345	G-19	R4503	B-17
D1116	F-27	L141	A-29	Q3309	F-18	R164	B-28	R527	B-24	R1075	H-22	R1436	D-18	R3349	G-19	R4504	B-17
D1117	F-27	L142	B-28	Q3312	F-20	R165	B-28	R528	B-24	R1079	G-22	R1437	D-18	R3350	F-17	R4505	B-17
D2501	I-20	L143	A-27	Q3313	F-20	R166	B-28	R531	B-24	R1084	H-23	R1438	E-18	R3351	E-17	R4506	B-17
D2502	I-20	L303	F-22	Q3314	F-19	R167	B-28	R532	B-25	R1085	H-22	R1444	E-20	R3352	E-17	R4507	B-17
D2503	I-20	L304	F-24	Q3315	E-17	R168	B-28	R533	B-25	R1086	H-22	R1446	E-20	R3353	E-17	R4508	B-17
D2504	I-20	L305	G-22	Q3316	F-17	R169	B-28	R534	C-24	R1087	H-23	R1447	E-20	R3354	E-17	R4509	B-17
D2770	A-28	L306	G-23	Q3317	F-17	R170	B-28	R535	C-25	R1088	H-21	R1450	E-21	R3358	H-20	R4510	B-17
D4101	H-18	L307	C-16	Q3318	F-19	R181	A-28	R536	C-25	R1089	I-21	R1455	E-20	R3361	H-21	R4511	B-17
D4102	G-18	L702	D-30	Q3321	F-20	R305	D-23	R537	C-23	R1090	H-21	R1456	E-20	R3366	H-20	R4512	B-18
D4103	G-18	L703	D-28	Q3322	F-20	R306	F-23	R538	C-23	R1091	H-21	R1501	H-23	R3367	H-21	R4513	B-18
D4104	F-18	L801	G-28	Q3323	F-19	R307	E-22	R539	C-23	R1092	H-22	R1623	H-21	R3368	H-21	R4514	B-18
		L802	D-28	Q3324	E-17	R310	F-22	R540	B-23	R1093	I-23	R1624	I-21	R3382	G-20	R4518	B-19
FB301	F-22	L901	C-25	Q3326	H-21	R311	F-22	R542	B-23	R1094	I-23	R1625	I-21	R3383	G-20	R4519	B-19
FB302	D-17	L902	C-25	Q3328	H-20	R312	F-22	R704	B-29	R1094	I-23	R1626	I-21	R3384	G-19	R4520	B-19
FB303	F-23	L1002	G-24	Q3336	H-21	R313	F-23	R706	C-29	R1095	H-21	R1642	I-21	R3385	G-20	R4521	B-19
FB304	C-16	L1003	G-22	Q3340	G-20	R314	F-23	R708	D-29	R1096	I-21	R2200	A-30	R3386	G-20	R4522	B-19
FB305	D-24	L1004	G-22	Q3341	G-20	R315	F-23	R710	B-29	R1097	I-21	R2201	A-29	R3391	F-18	R4526	H-18
FB306	E-22	L1035	B-26	Q3352	I-17	R316	F-24	R711	C-29	R1098	H-21	R2202	B-29	R3392	F-18	R4527	H-18
FB307	G-24	L1085	I-22	Q3353	I-19	R317	F-24	R712	C-29	R1099	I-23	R2203	B-30	R3400	H-20	R4528	G-18
FB501	C-23	L1086	I-23	Q3450	H-19	R318	F-25	R713	C-29	R1100	I-23	R2204	B-30	R3401	H-19	R4529	G-18
FB703	E-28	L1087	I-22	Q4100	H-18	R319	F-25	R714	E-30	R1101	I-23	R2205	B-29	R3402	I-19	R4537	H-16
FB704	D-29	L1302	B-26	Q4101	H-18	R320	F-22	R715	E-30	R1102	H-23	R2206	B-30	R3403	I-19	R4538	H-16
FB705	D-28	L1304	B-26														

DSR-250/250P

MS-058 BOARD (SIDE A)

CN011 D-3
CN012 E-3

MS-058 BOARD (SIDE B)

D011 A-5

R011 B-2
R012 A-5
R013 C-2
R014 C-2
R015 C-2
R016 C-2

MD-76 BOARD

C1	E-5	R11	D-5
C2	D-5	R12	D-5
		R13	D-5
CN1	E-5	R14	C-2
CN2	D-5	R15	A-5
CN3	A-6	R28	D-2
		R29	D-5
IC1	D-5	R30	D-4
IC2	D-2	R31	D-5
IC3	E-5	R32	B-7
		R33	B-7
JR1	D-4		
JR3	D-6		
JR4	D-3		
JR5	E-5		
JR6	D-5		
R1	A-6		
R3	D-4		
R4	D-5		
R5	D-5		
R6	D-5		
R7	D-3		
R8	D-4		
R9	B-7		
R10	D-5		

JK-197 BOARD (SIDE A)

D181	D-1	R182	D-2
D183	D-1	R183	D-2
D185	D-2	R184	D-2
D186	D-1	R189	D-2
D188	D-2		
D189	D-2		
J181	E-2		
J182	E-5		

JK-197 BOARD (SIDE B)

C181	A-2	R181	B-4
C182	B-2	R185	C-1
C183	A-1	R186	C-1
C184	A-2	R187	A-1
		R188	B-2
CN181	C-2	R190	A-2
		R191	C-4
		R192	C-4
D182	A-4		
D184	A-4		
D187	A-4		
FB181	A-4		
FB182	A-4		
L181	A-1		
L182	B-2		

VO-012 BOARD (SIDE A)

CN202 A-2

D201 A-1

R201 A-1

VO-012 BOARD (SIDE B)

CN201 B-4

RL-057 BOARD

CN141 A-3

D141 C-3
D142 B-3
D143 C-3

J141 C-1

R141 B-3
R142 C-3
R143 B-3
R144 C-3
R145 C-3
R146 B-3

DV-031 BOARD

CN161 A-1
CN162 B-1

JS161 B-4
JS162 B-4

LP161 A-4

KY-049 BOARD (SIDE A)

S261 B-1
S262 B-5
S263 B-2
S264 B-4
S265 B-3
S266 B-6
S267 C-4
S268 C-3
S269 C-5
S270 C-2
S271 C-1

KY-049 BOARD (SIDE B)

CN261 A-3
CN262 A-3

D261 A-3

R261 A-6
R262 A-1
R263 A-4
R264 A-2
R265 A-4
R266 A-4
R267 A-3
R268 A-4
R269 A-3
R270 A-2

EJ-034 BOARD

CN291 A-4

S291 B-2

FC-074 BOARD

CN221 3-C

D221 B-4
D222 B-4

R221 B-4
R222 B-4
R223 C-4

S221 A-1
S222 B-1

LL-010 BOARD (SIDE A)

R471 A-2

S471 A-3
S472 A-1
S473 A-4
S474 D-4

LL-010 BOARD (SIDE B)

CN471 B-6

D471 B-7
D472 B-7

R473 A-8

FS-082 BOARD (SIDE A)

D401 D-2
D402 D-2

RV401 D-5

S401 E-2
S402 D-1
S403 E-5
S404 D-3
S405 E-5

FS-082 BOARD (SIDE B)

CN401 B-2

R401 A-2
R402 A-2
R403 A-3
R404 A-3
R405 A-3
R406 A-5
R407 A-2
R408 A-2

PARTS LOCATION

MS-058, MD-76, JK-197, RL-057, DV-031, KY-049, EJ-034, FC-074, LL-010, FS-082

SW-343 BOARD (SIDE A)

D101	C-5	S501	B-6
D501	A-5	S502	B-12
D502	A-5	S503	B-5
D503	A-5	S504	A-5
D504	A-5	S505	B-5
D505	A-5	S506	A-5
D507	A-4	S507	B-4
		S508	B-3
FB501	C-3	S509	B-3
FB502	C-3	S510	A-3
FB503	C-3	S511	A-4
		S512	B-3
R101	C-6	S513	A-4
R102	C-6	S514	B-4
R103	C-6	S515	A-3
R104	C-6	S516	B-3
R105	C-6	S517	A-4
R505	B-3	S518	C-6
R507	B-3	S519	C-5
R509	B-3	S520	C-7
R511	B-3		
R513	B-3		
RV501	B-7		
RV502	A-7		
RV503	C-1		

SW-343 BOARD (SIDE B)

BT501	A-11	Q001	C-14
C501	A-13		
CN502	A-13	R501	A-13
CN503	C-13	R502	A-13
CN504	B-13	R503	A-13
CN505	C-12	R504	C-8
CN506	A-12	R506	B-12
CN507	C-12	R508	B-12
CN508	B-13	R510	B-12
CN509	A-13	R512	A-12
CN511	A-13	R514	A-12
CN512	C-13	R515	B-10
		R516	A-10
D506	B-12	R517	C-14
D508	C-14	R518	C-14
		R519	C-14
		R520	C-14
IC501	A-13		

SB-036 BOARD (SIDE A)

S061	A-7
S062	C-2
S063	C-5
S064	C-1
S065	C-7
S066	C-7
S067	F-2
S068	E-2

SB-036 BOARD (SIDE B)

CN061	C-9
D061	C-10
D062	D-10
R061	A-10
R062	B-10
R063	C-10
R064	C-10
R065	C-10
R066	D-10

PM-040 BOARD

CN081	B-5
D081	B-5
D082	A-7
R001	A-5
S801	B-3
S802	A-1

AE-023 BOARD (SIDE A)

CN041	D-3
D042	C-3
S041	C-1
S042	C-2
S043	C-3
S044	C-4
S045	C-6

AE-023 BOARD (SIDE B)

D041	A-4
D043	B-1
R041	A-4
R042	A-4
R043	A-4
R044	A-4
R045	A-4
R046	B-6

KP-011 BOARD (SIDE A)

CN121	C-1
D121	C-1
D122	C-1
S121	B-1

PD-126 BOARD (SIDE A)

C2101	C-1	Q2108	B-1
C2102	D-1	Q2109	B-3
C2103	D-1	Q2111	C-2
C2104	C-1	Q2112	B-3
C2105	C-1	Q2181	C-3
C2106	D-1	Q2182	D-3
C2107	C-1	Q2183	B-3
C2108	D-1		
C2109	D-1	R2109	D-1
C2110	C-1	R2110	D-1
C2111	C-2	R2111	D-1
C2112	D-2	R2112	C-1
C2113	C-2	R2113	B-1
C2114	D-2	R2114	D-2
C2115	D-3	R2115	C-2
C2116	C-2	R2116	C-2
C2117	C-2	R2117	C-2
C2118	D-2	R2118	C-2
C2119	D-3	R2119	C-2
C2120	D-2	R2122	C-2
C2121	C-2	R2123	C-3
C2122	C-2	R2124	C-2
C2123	C-3	R2125	C-2
C2124	C-3	R2126	C-3
C2125	C-3	R2127	D-3
C2126	B-3	R2128	C-3
C2127	C-3	R2129	C-2
C2128	B-3	R2134	C-3
C2129	B-2	R2135	C-2
C2130	D-1	R2136	C-2
C2131	C-2	R2137	C-3
C2132	C-1	R2138	C-3
C2133	B-2	R2139	B-2
C2134	D-1	R2140	B-2
C2135	D-1	R2141	B-2
C2136	C-1	R2142	B-2
C2137	D-2	R2144	C-3
C2138	C-3	R2145	C-3
C2181	C-3	R2146	B-1
C2182	B-3	R2147	C-3
C2183	C-3	R2148	C-3
C2184	C-3	R2149	B-2
C2185	C-3	R2150	B-3
C2186	D-3	R2151	C-2
		R2152	B-3
CN2100	C-1	R2153	B-3
CN2101	B-1	R2154	B-3
CN2103	B-3	R2155	A-3
CN2104	B-2	R2157	B-3
CN2105	D-3	R2158	C-3
		R2159	B-3
D2101	C-1	R2160	B-3
D2102	C-2	R2161	B-3
D2103	B-2	R2162	B-2
D2104	B-2	R2163	C-2
D2105	B-3	R2165	B-3
D2181	A-3	R2166	B-3
		R2168	D-1
IC2101	D-2	R2169	D-1
IC2103	B-2	R2170	C-2
		R2171	D-3
L2101	C-1	R2172	B-3
L2102	C-1	R2173	D-1
L2103	D-2	R2174	D-1
L2104	C-2	R2175	C-1
L2105	B-1	R2176	C-2
L2181	C-3	R2177	B-3
L2182	C-3	R2178	C-2
		R2179	C-2
Q2101	D-3	R2180	C-2
Q2102	C-3	R2181	D-3
Q2103	C-3	R2182	D-3
Q2104	C-3	R2183	A-4
Q2105	C-2	R2184	B-2
Q2106	B-2	R2185	D-2
Q2107	B-1	R2186	D-3

SE-116 BOARD

C600	B-5	R601	B-5
C601	B-5	R602	B-5
		R603	B-7
CN600	B-5	R604	B-5
FB601	B-5	SE600	B-3
FB602	B-7	SE601	B-1
L600	B-5		

ON-001 BOARD

CN2001	A-1
CN2002	E-3

NO-001 BOARD (SIDE B)

CN421	A-1
CN422	B-2

HP-129 BOARD

CN901	B-1	JS901	B-4
		JS902	B-4
D901	B-4	JS903	B-4
D902	B-4	JS904	B-4
D903	B-4	JS905	B-4
D904	B-4		
J901	A-1		

TH-010 BOARD

C451	C-4	Q451	A-1
CN451	A-4	R451	A-2
		R452	A-1
D451	B-2	R453	C-2
D452	B-1	R454	B-4
D453	A-1		
D454	C-2	S451	A-1
IC451	C-1		

ME-019 BOARD (SIDE A)

C711	B-4	R701	B-3
C712	B-4	R702	B-3
C713	B-3	R703	B-3
C714	B-3	R708	A-3
C735	D-4	R716	A-3
C736	D-4	R717	A-3
C737	D-4	R719	B-4
C738	D-3	R720	B-4
C739	D-4	R753	B-5
C751	B-3	R754	C-4
C753	B-3	R755	C-4
C755	B-3	R756	C-4
C757	B-2	R757	C-4
		R758	D-4
CN701	C-2	R759	D-5
CN702	A-1	R760	D-3
CN703	D-4	R761	C-4
CN704	A-4	R762	C-3
CN705	C-5	R763	C-4
IC705	D-4	R784	B-3
IC706	C-3	R791	B-3
L705	C-3		
Q705	A-4		
Q706	C-4		
Q709	B-3		

ME-019 BOARD (SIDE B)

C701	D-8	Q704	B-6
C702	D-7	Q707	B-9
C703	D-7	Q708	B-8
C704	D-8		
C705	D-7	R241	B-9
C706	D-7	R704	D-7
C707	D-7	R705	D-7
C708	D-7	R707	D-7
C709	A-6	R708	D-7
C710	D-7	R709	D-7
C715	D-9	R710	D-7
C716	D-9	R711	D-6
C717	C-9	R712	D-6
C718	C-9	R713	D-7
C719	C-9	R714	D-6
C720	C-9	R715	D-6
C721	C-8	R718	D-7
C722	C-8	R721	D-9
C723	C-8	R722	D-9
C724	C-8	R723	D-9
C726	C-7	R724	D-9
C727	C-7	R725	D-9
C734	C-6	R728	D-9
C734	C-6	R729	D-9
C740	C-7	R730	C-8
C741	C-7	R731	C-8
C742	C-7	R732	C-9
C743	C-7	R733	C-8
C744	C-7	R734	C-8
C745	C-7	R735	C-8
C746	C-7	R736	C-8
C747	C-6	R748	A-7
C748	C-7	R749	B-6
C749	C-7	R750	B-6
C750	B-7	R751	A-7
C752	B-8	R752	D-6
C754	B-8	R764	C-7
C756	B-8	R765	C-7
C758	B-7	R766	C-7
		R767	C-7
D701	C-9	R768	C-7
D702	C-9	R770	C-6
D703	C-9	R771	C-7
D704	C-9	R772	B-6
D725	C-8	R773	C-6
		R774	B-6
FB701	A-7	R776	B-6
FB702	A-7	R777	C-7
FB703	B-7	R778	C-7
FB704	B-7	R779	C-7
FB705	A-7	R780	B-8
FB706	A-7	R781	B-8
		R782	B-8
IC701	A-6	R783	B-8
IC702	D-9	R785	B-8
IC703	C-8	R786	B-7
IC707	C-6	R787	B-8
		R788	B-7
L701	D-7	R789	B-9
L702	D-8	R790	B-8
L703	D-7		
L704	C-7		

XL-003 BOARD (SIDE A)

C819	E-2	L808	E-2
C820	E-1		
C821	G-6	R825	F-2
C822	F-6	R826	F-6
C823	E-2	R827	E-1
C824	E-1	R828	F-6
C825	F-6		
C826	E-6	S801	G-3
C850	E-1	S802	G-5
C852	E-1		
CN801	F-3		
CN802	F-5		

XL-003 BOARD (SIDE B)

C801	C-3	R801	C-3
C802	C-3	R802	C-3
C803	C-5	R803	C-5
C804	C-5	R804	C-5
C805	B-2	R805	C-3
C806	B-2	R806	C-3
C807	B-4	R807	C-5
C808	B-4	R808	C-5
C809	C-3	R809	C-4
C810	C-3	R810	C-3
C811	C-5	R811	C-5
C812	C-5	R812	C-5
C813	C-2	R813	C-4
C814	C-2	R814	C-3
C815	C-4	R815	C-3
C816	C-4	R816	C-5
C817	A-3	R817	C-5
C818	A-5	R818	C-5
C827	B-3	R819	C-4
C828	B-5	R820	C-3
C829	A-3	R821	C-6
C830	A-5	R822	C-5
C831	B-3	R823	A-3
C832	B-5	R824	A-5
C833	B-3	R829	A-4
C834	B-3	R830	A-5
C835	B-5	R831	A-3
C836	B-5	R832	A-5
C837	A-2	R833	B-3
C838	A-4	R834	B-5
C839	A-2	R835	A-3
C840	A-4	R836	A-5
C841	B-3	R836	B-6
C842	B-5	R837	B-4
C843	B-2	R839	B-4
C844	B-4	R840	B-4
C845	B-2	R841	B-6
C846	B-4	R842	B-6
C847	B-2	R843	A-2
C848	B-4	R844	A-2
C849	C-2	R845	A-2
C851	C-2	R846	A-4
		R847	A-4
		R848	A-4
		R849	B-3
		R850	B-5
		R851	A-2
		R852	A-4
		R853	A-2
		R854	A-4
		R855	B-3
		R856	B-5
		R857	C-1
IC801	B-3		
IC802	B-5		
IC803	B-2		
IC804	B-4		
L801	C-3		
L802	C-5		
L803	C-3		
L804	C-5		
L805	C-2		
L806	C-4		
L807	C-2		

DD-146 BOARD (SIDE A)

C301	C-2	IC302	B-2
C302	C-2		
C305	C-2	L301	C-2
C307	C-2	L302	D-4
C308	C-2	L304	C-3
C311	C-3	L308	D-1
C313	C-4	L309	E-2
C315	C-3	L310	D-4
C316	C-3		
C317	C-3	PS302	E-4
C318	C-3	PS304	E-4
C319	D-3		
C320	E-3	Q305	B-3
C321	B-3	Q308	D-4
C322	B-3	Q311	B-3
C331	B-3	Q312	B-3
C333	C-1	Q320	B-1
C340	B-2	Q322	B-1
C342	E-1	Q323	B-1
C344	B-1		
C345	B-1	R305	B-2
C345	B-2	R309	B-2
		R310	C-2
CN301	F-1	R313	B-2
CN302	F-2	R315	D-3
CN303	A-3	R325	B-3
CN304	A-2	R326	B-3
CN305	F-3	R348	B-1
CN306	A-1	R353	B-1
		R354	B-1
D301	D-3	R404	C-3
D303	D-2	R405	F-1
		R406	A-4
F301	E-4		
F302	E-4		
F303	E-4		
F304	E-3		
F305	E-3		

DD-146 BOARD (SIDE B)

C304	D-5	Q313	D-8
C306	D-5	Q314	D-8
C309	D-5	Q315	B-6
C310	D-6	Q316	D-7
C312	C-5	Q317	D-7
C314	B-7	Q318	C-8
C323	D-8	Q319	D-7
C324	B-6	Q321	E-7
C325	C-8		
C326	C-7	R302	D-5
C327	D-8	R303	D-5
C328	D-7	R304	D-5
C329	B-6	R306	D-5
C330	B-6	R307	D-5
C332	C-8	R308	D-5
C334	C-7	R311	D-5
C335	C-7	R312	D-5
C336	C-7	R314	B-7
C337	C-7	R317	C-7
C338	B-7	R318	C-5
C339	B-7	R319	C-5
C341	D-8	R320	C-7
C343	E-7	R321	C-7
C346	E-8	R322	C-7
C347	E-8	R323	C-7
C348	B-8	R324	C-7
C349	B-8	R327	D-8
C350	B-8	R328	D-8
C351	B-7	R329	B-6
C352	F-6	R330	D-8
C353	F-6	R331	D-8
		R332	D-7
D302	B-6	R333	C-8
D304	D-7	R334	C-8
D305	D-7	R335	D-7
		R336	D-7
F307	A-7	R337	D-7
		R338	C-8
IC301	D-5	R339	C-8
IC303	C-8	R340	C-8
IC304	D-8	R341	B-7
		R342	B-7
L306	B-7	R343	B-7
		R344	B-7
PS303	F-7	R345	E-8
		R346	E-8
Q303	D-6	R347	D-8
Q304	D-6	R349	D-8
Q306	C-7	R350	D-8
Q307	C-7	R351	E-8
Q309	C-7	R352	D-7
Q310	C-7		

DSR-250/250P

DC-095 BOARD

C281 A-1
CN281 A-1
CN282 A-4

IN-057 BOARD

C241 B-2
C242 B-4
C243 E-1

CB241 E-2

CN241 A-1
CN242 B-1
CN243 E-1

D241 A-2

Q241 C-4
Q242 B-4
Q243 B-4

R243 A-4
R244 B-4

VL-034 BOARD

C481 A-1
C482 A-1

CN481 A-4
CN482 B-2
CN483 B-1

LP481 A-2

SECTION 5 ADJUSTMENTS

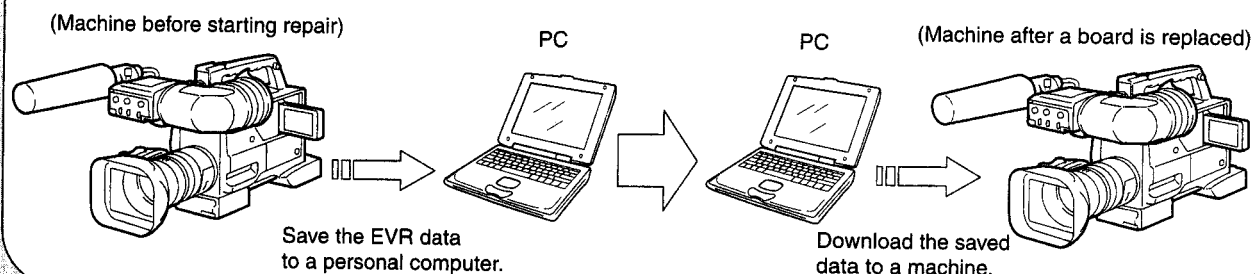
1. Before starting adjustment

EVR Data Re-writing Procedure When Replacing Board

The data that is stored in the repair board, is not necessarily correct.
Perform either procedure 1 or procedure 2 or procedure 3 when replacing board.

Procedure 1

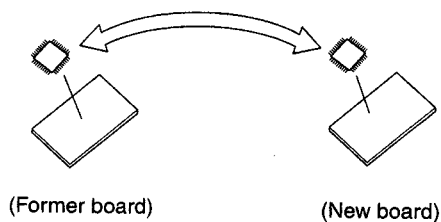
Save the EVR data of the machine in which a board is going to be replaced. Download the saved data after a board is replaced.



Procedure 2

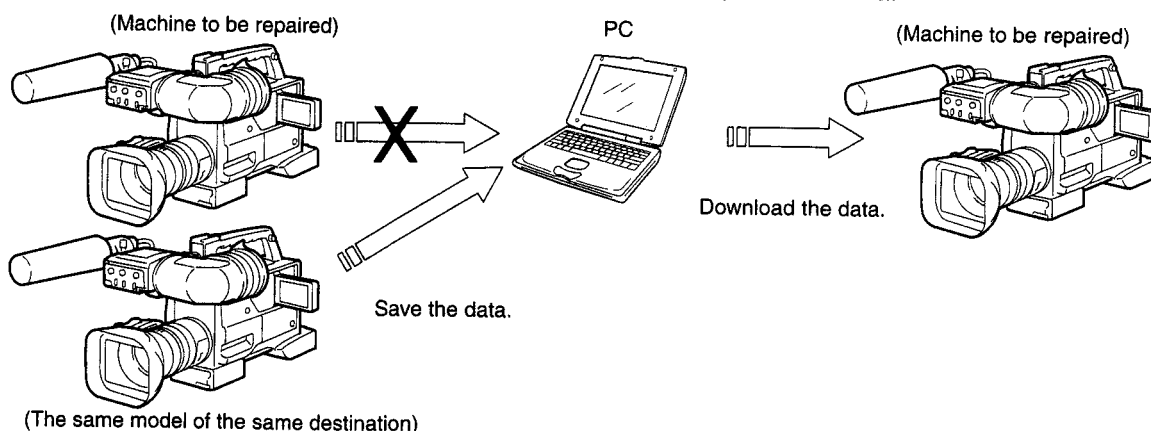
Remove the EEPROM from the board of the machine that is going to be repaired. Install the removed EEPROM to the replaced board.

Remove the EEPROM and install it.



Procedure 3

When the data cannot be saved due to defective EEPROM, or when the EEPROM cannot be removed or installed, save the data from the same model of the same destination, and download it.



After the EVR data is saved and downloaded, check the respective items of the EVR data.
(Refer to page 5-3 for the items to be checked.)

1-1. Adjusting items when replacing main parts and boards.

• Adjusting items when replacing main parts

When replacing main parts, adjust the items indicated by ● in the following table.

Adjustment Section	Adjustment	Replaced parts																						
		Block replacement								Parts replacement														
		Lens device	Prism assy (Including 3 CCD imagers)	VAP unit	Mechanism deck (Note 1)	LCD block LCD901 (LCD panel)	LCD block ND901 (Fluorescent tube)	LCD block Inverter unit	Control switch (CF-1044)	Mechanism deck M901 (Drum motor) (Note 1)	Mechanism deck M902 (Capstan motor) (Note 1)	SE-116 board SE601/SE600 (PITCH/YAW sensor)	PD-126 board IC2101 (RGB driver (LCD))	PD-126 board IC2103 (Timing generator (LCD))	VI-156 board IC705, X701 (Timing generator)	VI-156 board IC704 (S/H, AGC)	VI-156 board IC706 (A/D converter)	VI-156 board IC802 (Camera micro processor)	VI-156 board IC1301 (LINE IN/OUT amp)	VI-156 board IC301 (DV signal process)	VI-156 board IC101 (EQ, A/D CONV., PLL)	VI-156 board IC102 (REC/PB amp)	VI-156 board IC803 (EVR)	MD-76 board IC2, 3, RV1 to 4
Initialization of A, B, C, D, E, F, 8 page data	Initialization of C, D, 8 page data																							
	Initialization of A page data																							
	Initialization of B page data																							
	Initialization of E, F page data																							
Camera	27MHz origin oscillation adj.																							
	Zoom key center adj.																							
	HALL adj.																							
	Offset adj.																							
	Flange back adj.																							
	Pre-white balance data input																							
	AWB standard data input																							
	MAX GAIN adj.																							
	LV standard data input																							
	White balance ND filter 1 compensation																							
	White balance ND filter 2 compensation																							
	Auto white balance adj.																							
	Color reproduction adj. (ND filter OFF)																							
	Color reproduction adj. (ND filter 1)																							
	Color reproduction adj. (ND filter 2)																							
		Steady shot adj.																						
LCD	VCO adj.																							
	Bright adj.																							
	Black limit adj.																							
	Contrast adj.																							
	Center level adj.																							
	V COM adj.																							
	White balance adj.																							
System control	Serial No. input																							
	Battery end adj.																							
Servo, RF	CAP FG duty adj.																							
	Switching position adj.																							
	AGC center level adj.																							
	APC & AEQ adj.																							
	PLL f ₀ & LPF f ₀ adj.																							
Video	Chroma BPF f ₀ adj.																							
	S VIDEO OUT Y level adj.																							
	S VIDEO OUT Cr, Cb level adj.																							
Mechanism	Tape path adj.																							
	TG2/7 elec. tension reg. adj.																							

Table. 5-1-1(1).

• **Adjusting items when replacing a board or EEPROM**

When replacing a board or EEPROM, adjust the items indicated by ● in the following table.

Adjustment Section	Adjustment	Board replacement							
		CD-274 board	MD-76 board	VI-156 board	SE-116 board	PD-126 board	VI-156 board	IC801	IC502
Initialization of A, B, C, D, E, F, 8 page data	Initialization of C, D, 8 page data			●				●	
	Initialization of A page data			●					●
	Initialization of B page data			●					●
	Initialization of E, F page data			●			●		
Camera	27MHz origin oscillation adj.			●			●		
	Zoom key center adj.								
	HALL adj.			●			●		
	Offset adj.	●		●			●		
	Flange back adj.	●		●			●		
	Pre-white balance data input	●		●			●		
	AWB standard data input	●		●			●		
	MAX GAIN adj.	●		●			●		
	LV standard data input	●		●			●		
	White balance ND filter 1 compensation	●		●			●		
	White balance ND filter 2 compensation	●		●			●		
	Auto white balance adj.	●		●			●		
	Color reproduction adj. (ND filter OFF)	●		●			●		
	Color reproduction adj. (ND filter 1)	●		●			●		
	Color reproduction adj. (ND filter 2)	●		●			●		
	Steady shot adj.			●	●		●		
LCD	VCO adj.			●	●		●		
	Bright adj.			●	●		●		
	Black limit adj.			●	●		●		
	Contrast adj.			●	●		●		
	Center level adj.			●	●		●		
	V COM adj.			●	●		●		
	White balance adj.			●	●		●		
System control	Serial No. input			●			●		
	Battery end adj.			●			●		
Servo, RF	CAP FG duty adj.			●			●		
	Switching position adj.			●			●		
	AGC center level adj.			●			●		
	APC & AEQ adj.			●			●		
Video	PLL f ₀ & LPF f ₀ adj.			●			●		
	Chroma BPF f ₀ adj.			●			●		
	S VIDEO OUT Y level adj.			●			●		
Mechanism	S VIDEO OUT Cr, Cb level adj.			●			●		
	Tape path adj.	●							
	TG2/7 elec. tension reg. adj.	●							

Note1: When replacing the following parts, reset the HRS METER data (page: A, address: 00 to 13) to "00".

(Refer to "HRS METER (Hours meter)" of "5-4. SERVICE MODE")

- Mechanism deck
- Drum assembly
- Capstan motor

And when replacing the following parts, reset the data of page: 2, address: A2 to A4 to "00". (Refer to "Record of Use check" of "5-4. SERVICE MODE")

- Mechanism deck
- Drum assembly

Note2: When replacing the IC1105 by a user's having forgotten a password, copy the HRS METER data.
(Refer to "HRS METER (Hours meter)" of "5-4. SERVICE MODE")

Table. 5-1-1(2).

5-1. CAMERA SECTION ADJUSTMENT

1-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

1-1-1. List of Service Tools

- Oscilloscope
- Color monitor
- Vectorscope
- Regulated power supply
- Digital voltmeter

Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	White balance check
	ND filter 0.3	J-6080-818-A	White balance check (2 sheets used)
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjustment remote commander (RM-95 upgraded) (Note1)	J-6082-053-B	
J-6	Siemens star chart	J-6080-875-A	For checking the flange back
J-7	Clear chart for pattern box	J-6080-621-A	
J-8	CPC-13 jig	J-6082-443-A	For adjusting the video section
J-9	Mini pattern box	J-6082-353-B	For adjusting the flange back
J-10	Camera table	J-6082-384-A	For adjusting the flange back
J-11	Cleaning fluid	Y-2031-001-0	
J-12	Wiping cloth	7-741-900-53	
J-13	Super fine applicator (made by NIPPON APPLICATOR (P752D))	—	
J-14	Mirror (Small oval type)	J-6080-840-A	
J-15	Screwdriver for tape path	J-6082-026-A	Tape path for adjusting tape guide
J-16	Mode selector conversion board (R)	J-6082-460-A	
J-17	Tracking tape (XH2-1A1)(NTSC/PAL)	8-967-999-03	
J-18	Mini DV torque cassette	J-6082-360-A	For FWD torque, REV torque and FWD back tension
J-19	Mode Selector II	J-6082-282-B	For all operating
J-20	Mode Selector II ROM	J-6082-314-E	Corresponds to R mechanism (Note 2)
J-21	FLOIL Grease (SG-941)	7-622-601-39	
J-22	Cassette reference plate	J-6082-330-A	
J-23	Reel reference plate	J-6082-331-A	
J-24	TG2/7 preset plate	J-6082-459-A	
J-25	Relay board for tension regulator adjustment	J-6082-461-A	
J-26	Board for tension regulator adjustment	J-6082-359-A	
J-27	Circular connector (PF, XLR4P)	1-783-189-11	For connecting the regulated power supply (Note 3)

Note1: If the micro processor IC in the adjustment remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).

Note 2: ROM for version upgrading to allow use of the mode selector II with the R mechanism.

Note 3: Refer to "1-1-3. How to make the DC cable".

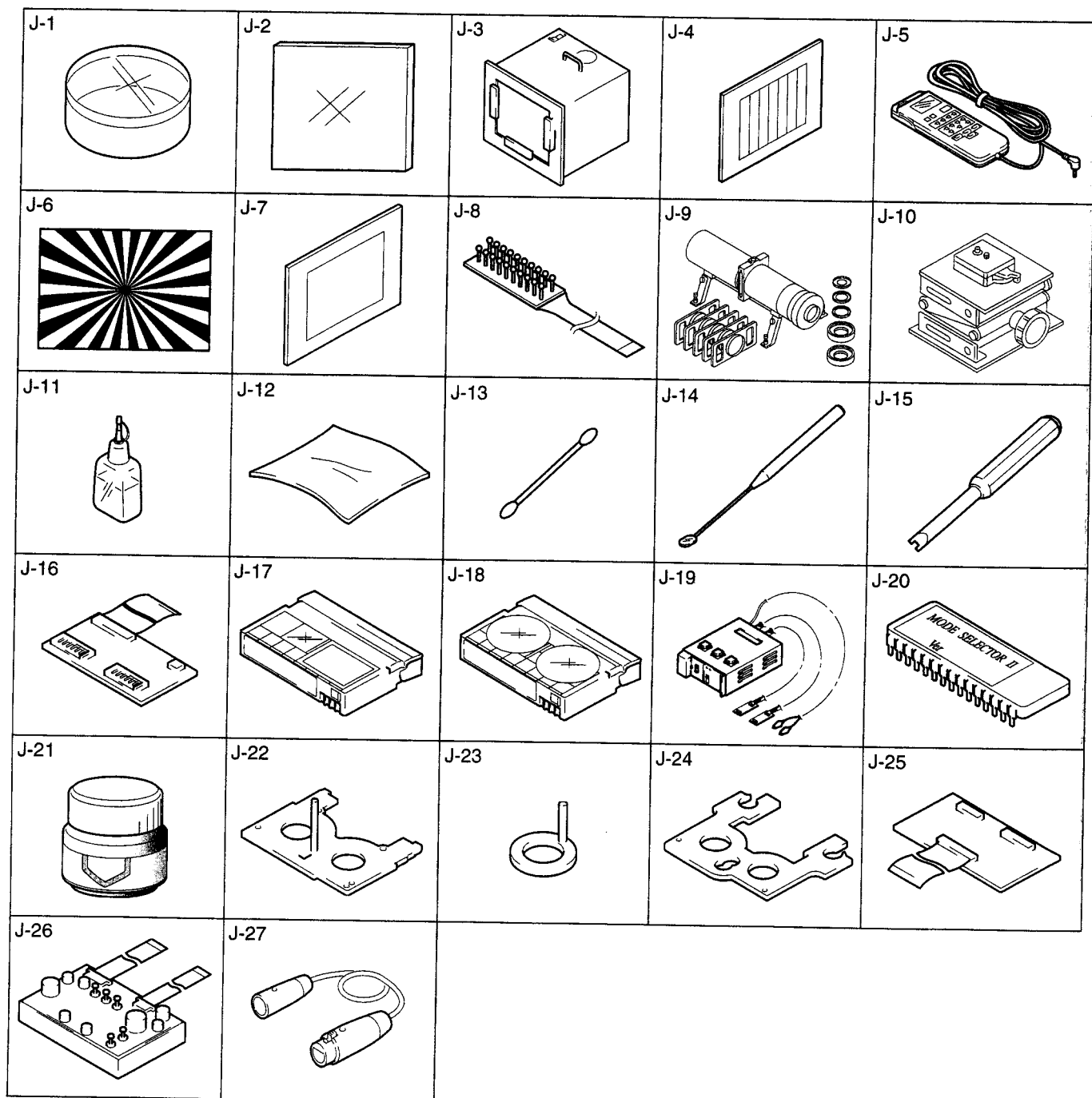


Fig. 5-1-1.

1-1-2. Preparations

Note 1: For details of how remove the cabinet and boards, refer to "2. DISASSEMBLY".

Note 2: When performing only the adjustments, the lens block and boards need not be disassembled.

1) Connect the equipment for adjustments according to Fig. 5-1-4.

Note 3: As removing the cabinet (R) (removing the VI-156 board CN014) means removing the lithium 3V power supply (SW-343 board BT501), data such as date, time, user-set menus will be lost. After completing adjustments, reset these data. If the cabinet (R) has been removed, the self-diagnosis data, data on history of use (total drum rotation time etc.) will be lost. Before removing, note down the self-diagnosis data and the data on history use (data of page: 2, address: A2 to AA). (Refer to "SELF-DIAGNOSIS FUNCTION" for the self-diagnosis data, and to "5-4. Service Mode" for the data on the history use.)

Note 4: Setting the "Forced Camera Power ON" Mode

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: D, address: 10, set data: 01, and press the PAUSE button of the adjustment remote commander.

The above procedure will enable the camera power to be turned on with the cabinet (R) assembly removed. After completing adjustments, be sure to exit the "Forced Camera Power ON Mode".

Note 5: Exiting the "Forced Camera Power ON" Mode

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjustment remote commander.
- 3) Select page: 0, address: 01, and set data: 00.

1-1-3. How to make the DC cable

Cut the connecting cable (1-783-189-11), and connect the regulated power supply to the circular connector (receptacle) as shown in the following figure.

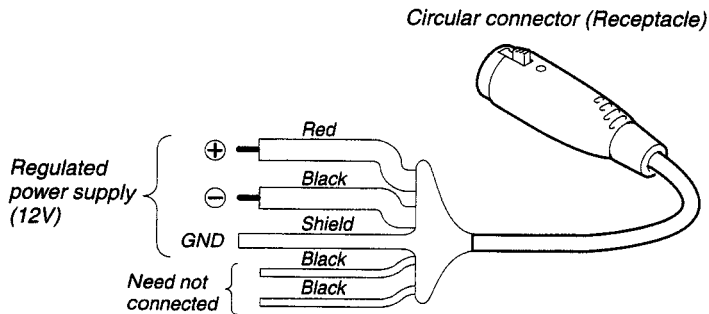


Fig. 5-1-3.

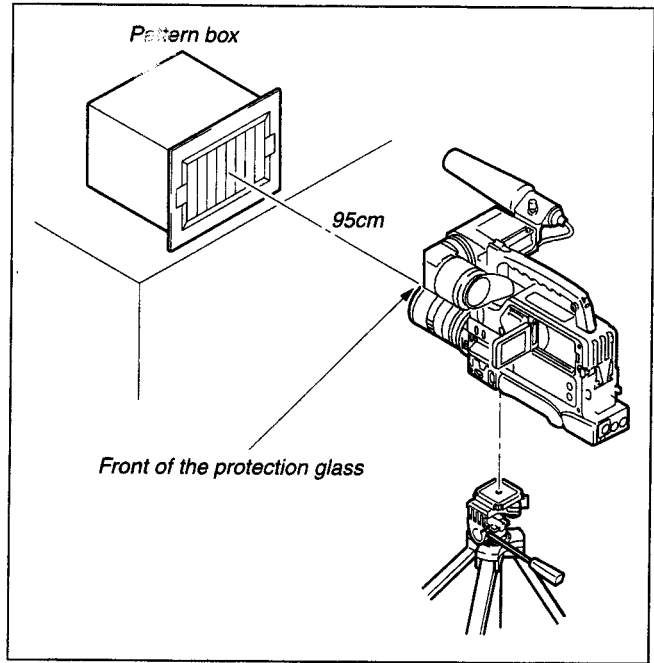


Fig. 5-1-2.

1-1-4. Precaution

1. Setting the Switch

Unless otherwise specified, set the switches as follows and perform adjustments without loading cassette.

1. MODE switch (PM-040 board) CAMERA
2. DIGITAL ZOOM (Menu display) OFF
3. STEADY SHOT (Menu display) OFF
4. DISPLAY (Menu display) V-OUT/LCD
5. DISPLAY (SB-036 board) ON
6. AUTO MODE (SB-036 board) ON
7. ND FILTER (Lens block) OFF
8. FOCUS switch (FC-074 board) MANUAL
9. BACK LIGHT (SB-036 board) OFF

10. SPOT LIGHT (SB-036 board) OFF
11. CUSTOM PRESET (CUSTOM PRESET MENU) OFF
12. DIGITAL EFFECT (SW-343 board) OFF
13. ZEBRA (SB-036 board) OFF
14. 16 : 9 WIDE (Menu display) OFF
15. AUTO SHUTTER (Menu display) OFF
16. PROG.SCAN (Menu display) OFF
17. SET UP (Menu display) 0%

2. Order of Adjustments

Basically carry out adjustments in the order given.

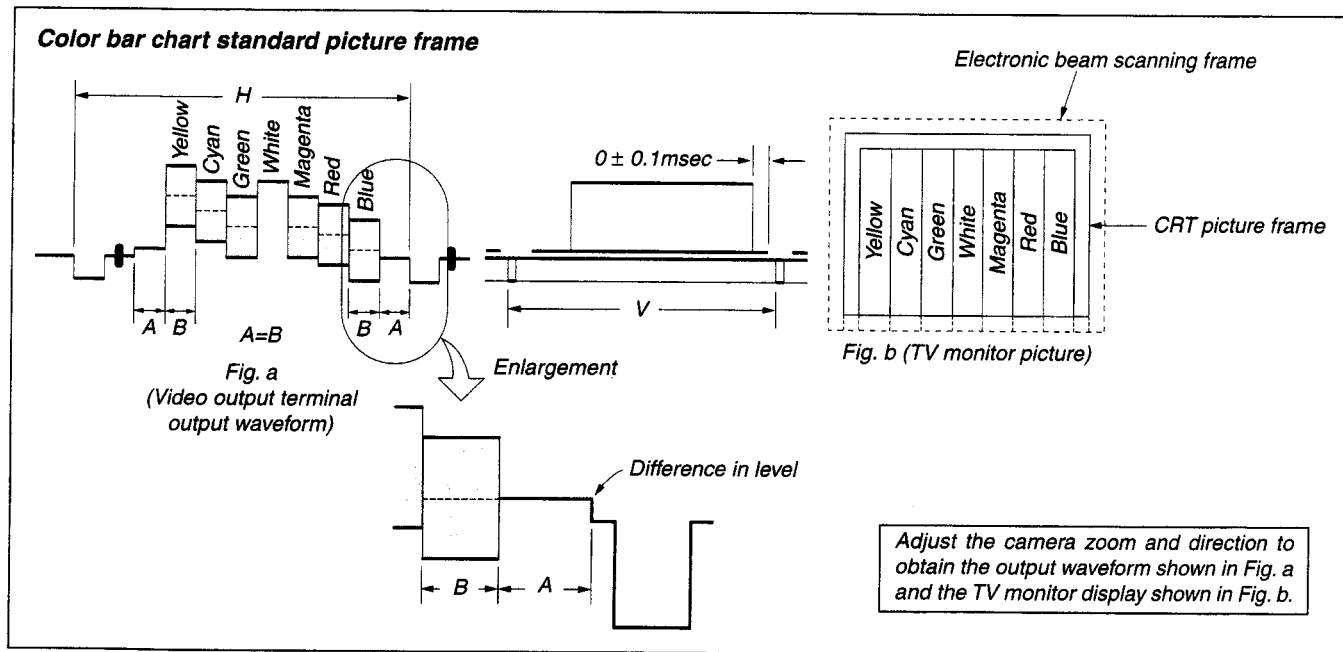


Fig. 5-1-5.

3. Subjects

- 1) Color bar chart (Standard picture frame).
When performing adjustments using the color bar chart, adjust the picture frame as shown in Fig. 5-1-5. (Standard picture frame)
- 2) Clear chart (Standard picture frame)
Remove the color bar chart from the pattern box and insert a clear chart in its place. (Do not perform zoom operations during this time.)
- 3) Flange back adjustment chart
Make the chart shown in Fig. 5-1-6. using A0 size (1189 mm × 841 mm) black and white vellum paper.

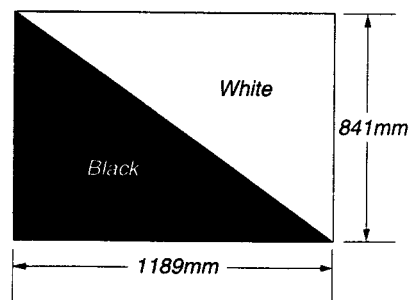


Fig. 5-1-6.

Note: Use matte vellum paper bigger than A0, and make sure the edges of the black and white paper joined together are not rough.

1-2. INITIALIZATION OF A, B, C, D, E, F, 8 PAGE DATA

1-2-1. INITIALIZATION OF A, C, D, 8 PAGE DATA

Adjustment Page	C
Adjustment Address	10 to FF
Adjustment Page	D
Adjustment Address	10 to FF
Adjustment Page	8
Adjustment Address	00 to FF
Adjustment Page	A
Adjustment Address	00 to FF

1. Initializing the C, D, 8 Page Data

Note1: If "Initializing the C, D, 8 Page Data" is performed, all data of the C page, D page and 8 page will be initialized. (It is impossible to initialize a single page.)

Note2: If the C, D, 8 page data has been initialized, the following adjustments need to be performed again.

- 1) Modification of C, D, 8 page data
- 2) Serial No. input
- 3) Servo and RF system adjustments
- 4) Video system adjustments
- 5) LCD system Adjustments

Initializing Method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data
2	3	81		Check that the data is "00".
3	3	80	0A	Set the data, and press the PAUSE button.
4	3	80		Check that the data changes to "1A"
5				Perform "Modification of C, D, 8 Page Data".

2. Modification of C, D, 8 Page Data

If the C, D, 8 page data has been initialized, change the data of the "Fixed data-2" address shown in the following tables by manual input.

Modifying Method:

- 1) Before changing the data, select page: 0, address: 01, and set data: 01.
- 2) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
Note: If copy the data built in the different model, the camcorder may not operate.
- 3) When changing the data, press the PAUSE button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
- 4) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.

Processing after Completing Modification of C, D, 8 Page data

Order	Page	Address	Data	Procedure
1	2	00	29	Set the data
2	2	01	29	Set the data, and press the PAUSE button.

Note: If the following symptoms occur after completing of the "Modification of C, D, 8 page data", check that the data of the "Fixed data-2" addresses of D page are same as those of the same model of the same destination.

- 1) The battery end mark on the LCD or viewfinder screen is flashing.
- 2) The power is shut off so that unit cannot operate.

3. C Page Table

Note: Fixed data-1: Initialized data. (Refer to "1. Initializing the C, D, 8 Page Data".)

Fixed data-2: Modified data. (Refer to "2. Modification of C, D, 8 Page Data".)

Address	Initial value	Remark
00 to 0F		
10	EE	Switching position adj.
11	00	
12	00	
13	00	
14 to 15		Fixed data-1
16	E0	Cap FG duty adj.
17		Fixed data-1
18	2A	AEQ adj.
19	2A	
1A		Fixed data-1
1B	32	AEQ adj.
1C	32	
1D		Fixed data-1
1E	25	AGC center level adj.
1F	3E	PLL f ₀ adj.
20	3E	
21	DC	APC adj.
22	99	LPF f ₀ adj.

Address	Initial value	Remark
23 to 24		Fixed data-1
25	88	S VIDEO out Y level adj.
26	E3	S VIDEO out Cr level adj.
27	22	S VIDEO out Cb level adj.
28	04	Chroma BPF f ₀ adj.
29	20	PLL f ₀ fine adj.
2A		Fixed data-1
2B		Fixed data-2
2C	03	APC adj.
2D to 3F		Fixed data-1
40		Fixed data-2
41		Fixed data-1
42		Fixed data-2
43 to 46		Fixed data-1
47		Fixed data-2
48 to 4A		Fixed data-1
4B		Fixed data-2
4C to 55		Fixed data-1
56		Fixed data-2
57 to 81		Fixed data-1
82		Fixed data-2
83 to 85		Fixed data-1
86		Fixed data-2
87		
88		
89		
8A to 99		Fixed data-1
9A		Fixed data-2
9B		
9C to A4		Fixed data-1
A5		Fixed data-2
A6		
A7		
A8 to AA		Fixed data-1
AB		Fixed data-2
AC		Fixed data-1
AD		Fixed data-2
AE		Fixed data-1
AF		Fixed data-2
B0		
B1		Fixed data-1
B2		Fixed data-2
B3		
B4		
B5		
B6		
B7		
B8		
B9		
BA to BF		Fixed data-1
C0		Fixed data-2
C1 to D5		Fixed data-1
D6		Fixed data-2
D7		
D8		
D9		

Address	Initial value	Remark
DA		Fixed data-2
DB		
DC		
DD		
DE to E5		Fixed data-1
E6		Fixed data-2
E7		Fixed data-1
E8	08	Serial No. input
E9	00	
EA	46	
EB	01	
EC	02	
ED	00	
EE	00	
EF	00	
F0 to F3		Fixed data-1
F4	00	Emergency memory address
F5	00	
F6	00	
F7	00	
F8	00	
F9	00	
FA	00	
FB	00	
FC	00	
FD	00	
FE	00	
FF	00	

Table. 5-1-2.

4. D Page Table

Note: Fixed data-1: Initialized data. (Refer to "1. Initializing the C, D, 8 Page Data".)
Fixed data-2: Modified data. (Refer to "2. Modification of C, D, 8 Page Data".)

Address	Initial value	Remark
00 to 0F		
10	00	Test mode
11 to 12		Fixed data-1
13		Fixed data-2
14		
15		Fixed data-1
16		Fixed data-2
17		
18		
19		Fixed data-1
1A		Fixed data-2
1B		
1C		
1D		Fixed data-1
1E		Fixed data-2
1F		
20		
21		
22		
23		
24		Fixed data-1
25		Fixed data-2
26		
27		
28		
29		
2A		Fixed data-1
2B		Fixed data-2
2C		
2D		Fixed data-1
2E		Fixed data-2
2F		
30		
31 to 32		Fixed data-1
33		Fixed data-2
34		
35		
36		
37		
38 to 43		Fixed data-1
44		Fixed data-2
45		
46		Fixed data-1
47		Fixed data-2
48 to 65		Fixed data-1
66		Fixed data-2
67 to 69		Fixed data-1
6A		Fixed data-2
6B to 7A		Fixed data-1
7B		Fixed data-2
7C to 7E		Fixed data-1

Address	Initial value	Remark
7F		Fixed data-2
80 to 8D		Fixed data-1
8E		Fixed data-2
8F		
90 to 9F		Fixed data-1
A0		Fixed data-2
A1		
A2	71	VCO adj. (LCD)
A3	71	
A4	9F	V-COM adj. (LCD)
A5	AA	Bright adj.(LCD)
A6	0A	Black limit adj.(LCD)
A7		Fixed data-2
A8	85	White balance adj. (LCD)
A9	75	
AA	40	Contrast adj. (LCD)
AB	30	Center level adj.(LCD)
AC		Fixed data-2
AD		
AE		
AF		
B0		
B1 to B8		Fixed data-1
B9		Fixed data-2
BA		
BB to C3		Fixed data-1
C4		Fixed data-2
C5		Fixed data-1
C6		Fixed data-2
C7 to CF		Fixed data-1
D0		Fixed data-2
D1		
D2 to D5		Fixed data-1
D6		Fixed data-2
D7		
D8 to DA		Fixed data-1
DB		Fixed data-2
DC to EF		Fixed data-1
F0	A9	Battery end adj.
F1	AD	
F2	AE	
F3	B5	
F4	C8	
F5	D7	
F6	E7	
F7		Fixed data-1
F8	A9	Battery end adj.
F9	AD	
FA	AE	
FB	B1	
FC	B5	
FD	B9	
FE	C0	
FF		Fixed data-1

Table. 5-1-3.

5. 8 Page Table

Note: Fixed data-1: Initialized data. (Refer to "1. Initializing the C, D, 8 Page Data".)
Fixed data-2: Modified data. (Refer to "2. Modification of C, D, 8 Page Data".)

Address	Remark
00 to 07	Fixed data-1
08	Fixed data-2
09 to 0F	Fixed data-1
10	Fixed data-2
11 to 30	Fixed data-1
31	Fixed data-2
32 to 5A	Fixed data-1
5B	Fixed data-2
5C to 72	Fixed data-1
73	Fixed data-2
74	
75 to 78	Fixed data-1
79	Fixed data-2
7A to 7D	Fixed data-1
7E	Fixed data-2
7F	
80	
81 to 8F	Fixed data-1
90	Fixed data-2
91 to 98	Fixed data-1
99	Fixed data-2
9A to FF	Fixed data-1

Table. 5-1-4.

6. Initializing the A Page Data

Note1: The HRS METER data of the menu are memorized in addresses 00 to 13.
Perform "Initializing the A Page Data" only when you don't know original values of addresses 00 to 13.
If you know original values, perform "HRS METER data re-writing procedure".
(Refer to "HRS METER" of "5-4. SERVICE MODE")

Initializing Method:

- 1) Before changing the data, select page: 0, address: 01, and set data: 01.
- 2) Input the initial value shown in the A page table to each address.
- 3) When inputting the data, press the PAUSE button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
- 4) After completing data inputting, turn off the power and remove the DC power supply or battery.

A Page Table

Address	Initial value	Remark
00	00	OPERATION (L)
01	00	OPERATION (H)
02	00	DRUM RUN (L)
03	00	DRUM RUN (H)
04	00	TAPE RUN (L)
05	00	TAPE RUN (H)
06	00	THREADING (L)
07	00	THREADING (H)
08	00	CHECK SUM (L)
09	00	CHECK SUM (H)
0A	00	OPERATION (L)
0B	00	OPERATION (H)
0C	00	DRUM RUN (L)
0D	00	DRUM RUN (H)
0E	00	TAPE RUN (L)
0F	00	TAPE RUN (H)
10	00	THREADING (L)
11	00	THREADING (H)
12	00	CHECK SUM (L)
13	00	CHECK SUM (H)
14 to FF		Fixed-1

Table. 5-1-5.

1-2-2. INITIALIZATION OF B PAGE DATA

Note: When reading the B page data, insert a "Memory Stick" into the "Memory Stick" slot.

Switch setting:

MODE MEMORY

1. Initializing the B Page Data

Note: If the B page data has been initialized, the following adjustments need to be performed again.

1) Modification of B page data

Adjustment Page	B
Adjustment Address	00 to FF

Initializing Method

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	5	01	F3	Set the data, and press PAUSE button.
3	5	00	01	Set the data, and press PAUSE button.
4	5	01		Wait for three seconds.
5	5	00		Check that the data is "00".
6	5	02		Check that the data is "00".
7				Perform "Modification of B Page Data".

2. Modification of B Page Data

If the B page data has been initialized, change the data of the "Fixed data-2" address shown in the following tables by manual input.

Preparations:

Order	Page	Address	Data	Procedure
1	2	8F	00	Set the data, and press PAUSE button.
2	2	8F	03	Set the data, and press PAUSE button.
3	2	8F	00	Set the data, and press PAUSE button.

Modifying Method:

- Before changing the data, select page: 0, address: 01, and set data: 01.
- New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
Note: If copy the data built in the different model, the camcorder may not operate.
- When changing the data, press the PAUSE button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.

Processing after Completing Modification of B Page data:

Order	Page	Address	Data	Procedure
1	2	00	29	Set the data.
2	2	01	29	Set the data, and press PAUSE button.

3. B Page Table

Note: Fixed data-1: Initialized data. (Refer to "1. or 3. Initializing the B Page Data".)

Fixed data-2: Modified data. (Refer to "2. or 4. Modification of B Page Data".)

Address	Remark
00 to 34	Fixed data-1
35	Fixed data-2
36,37	Fixed data-1
38	Fixed data-2
39	
3A	
3B	
3C	
3D	
3E to 5F	Fixed data-1
60	Fixed data-2
61 to FF	Fixed data-1

Table. 5-1-6.

1-2-3. INITIALIZATION OF E, F PAGE DATA

1. Initializing the E, F Page Data

Note1: If "Initializing the E, F Page Data" is performed, all data of the E page and F page will be initialized. (It is impossible to initialize a single page.)

Note2: If the E, F page data has been initialized, following adjustments need to be performed again.

- 1) Modification of E, F page data
- 2) Camera system adjustments

Adjustment Page	F
Adjustment Address	10 to FF
Adjustment Page	E
Adjustment Address	00 to FF

Switch setting:

MODE CAMERA

Initializing Method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	01		Set the following data, and press PAUSE button. 2D: DSR-250 (NTSC) 2F: DSR-250P (PAL)
3	6	03	01	Set the data, and press PAUSE button.
4	6	02		Check that the data changes to "01".
5				Perform "Modification of E, F Page Data".

2. Modification of E, F Page Data

If the E, F page data has been initialized, change the data of the "Fixed data-2" address shown in the following table by manual input.

Modifying Method:

- 1) Before changing the data, select page: 0, address: 01, and set data: 01.
- 2) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
Note: If copy the data built in the different model, the camcorder may not operate.
- 3) When changing the data, press the PAUSE button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
- 4) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.

Processing after Completing Modification of E, F Page data

- 1) Select page: 0, address: 01, and set data: 00.
- 2) Turn off the power and turn on again.

3. F Page Table

Note1: Fixed data-1: Initialized data. (Refer to "1. Initializing the E, F Page Data".)

Fixed data-2: Modified data. (Refer to "2. Modification of E, F Page Data".)

Address	Initial value		Remark
	NTSC	PAL	
00 to 0F			
10 to 1B			Fixed data-1
1C	80	80	27MHz origin osc. adj.
1D			Fixed data-1
1E	60	60	HALL adj.
1F	40	60	
20	00	00	AWB standard data input
21	15	15	
22	00	00	
23	2E	2E	
24	AE	AE	Flange back adj.
25	2B	2B	
26	44	44	
27	43	43	
28	B2	B2	
29	16	16	
2A	00	00	
2B	00	00	
2C	8B	8B	MAX GAIN adj.
2D to 33			Fixed data-1
34	88	90	Auto white balance adj.
35	6C	8F	
36	D6	D6	Flange back adj.
37	E6	E6	
38	46	46	
39	45	00	
3A	3F	19	
3B	3F	00	
3C	16	27	
3D	A8	A8	
3E	38	38	LV standard data input
3F	76	76	
40			Fixed data-1
41	50	50	Steady shot adj.
42	50	50	
43			Fixed data-1
44	EB	EB	Color reproduction adj. (ND filter OFF)
45	D5	D5	
46	20	20	
47	20	20	
48 to 49			Fixed data-1
4A	00	00	WB ND filter 1 compensation
4B	00	00	
4C to 5C			Fixed data-1
5D	80	80	Zoom key center adj.
5E to 62			Fixed data-1
63			Fixed data-2
64			
65 to 6F			Fixed data-1
70	89	89	HALL adj.
71 to FF			Fixed data-1

Table 5-1-7.

4. E Page Table

Note1: Fixed data-1: Initialized data. (Refer to "1. Initializing the E, F Page Data".)

Fixed data-2: Modified data. (Refer to "2. Modification of E, F Page Data".)

Note2: Refer to "2. Modification of E, F Page Data" for the camera microprocessor version.

Address	Initial value		Remark
	NTSC	PAL	
00 to 29	Fixed data-1		
2A	10	10	Pre-white balance data input
2B	10	10	
2C	Fixed data-1		
2D	80	80	Offset adj.
2E	80	80	
2F	80	80	
30 to 61	Fixed data-1		
62	EB	EB	Color reproduction adj. (ND filter 1)
63	D5	D5	
64	20	20	
65	20	20	
66 to 8D	Fixed data-1		
8E	00	00	WB ND filter 2 compensation
8F	00	00	
90	EB	EB	Color reproduction adj. (ND filter 2)
91	D5	D5	
92	20	20	
93	20	20	
94 to A2	Fixed data-1		
A3	Fixed data-2		
A4 to FF	Fixed data-1		

Table. 5-1-8.

1-3. CAMERA SYSTEM ADJUSTMENTS

Before perform the camera system adjustments, check that the specified values of "VIDEO SYSTEM ADJUSTMENT" are satisfied.

1. 27MHz Origin Oscillation Adjustment (VI-156 board)

Set the frequency of the clock for synchronization.

If deviated, the synchronization will be disrupted and the color will become inconsistent.

Subject	Not required
Measurement Point	Pin ④ of IC705 or pin ⑧ of IC302
Measuring Instrument	Frequency counter
Adjustment Page	F
Adjustment Address	1C
Specified Value	$f=13500000 \pm 68\text{Hz}$

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	F	1C		Change the data and set the frequency (f) to the specified value.
3	F	1C		Press PAUSE button.
4	0	01	00	Set the data.

2. Zoom Key Center Adjustment

Set the A/D value center of the microprocessor to the center voltage of the zoom key.

If deviated, the zoom lens operates of itself, even if the zoom key is the center position.

Subject	Not required
Measurement Point	Display data of page: 6, address: 50
Measuring Instrument	Adjustment remote commander
Adjustment Page	F
Adjustment Address	5D

Note: Don't touch the zoom switch during adjustment.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	50		Read the data, and this data is named D ₅₀ .
3	F	5D	D ₅₀	Set the data, and press PAUSE button.
4	0	01	00	Set the data.

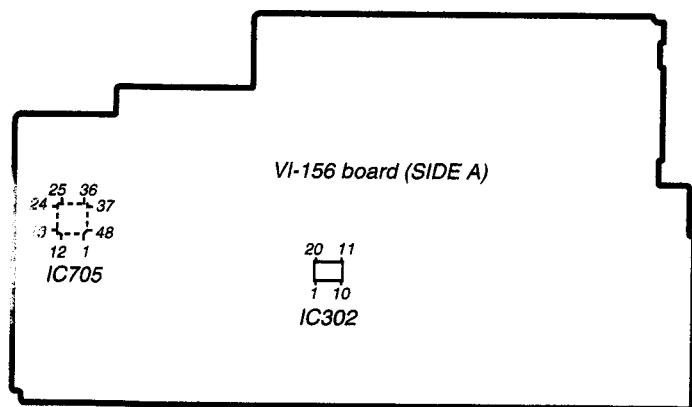


Fig. 5-1-7.

3. HALL Adjustment

For detecting the position of the lens iris, adjust AMP gain and offset.

Subject	Not required
Measurement Point	Display data of page 1 (Note1)
Measuring Instrument	Adjustment remote commander
Adjustment Page	F
Adjustment Address	1E, 1F, 70
Specified Value 1	7E to 82
Specified Value 2	13 to 17

Note1: Displayed data of page 1 of the adjustment remote commander.
1 : 00 : XX — IRIS display data

Note2: Check that the data of page: 6, address: 02 is "00". If not, to page: 6, address: 01, set data: 00, and press the PAUSE button.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	94	80	Set the data.
3	6	95	15	Set the data.
4	6	01	6D	Set the data, and press PAUSE button.
5	6	02		Check that the data changes to "01". (Note3)
6	6	01	00	Set the data, and press PAUSE button.

Note3: The adjustment data will be automatically input to page: F, address: 1E, 1F, 70.

Checking method:

Order	Page	Address	Data	Procedure
1	6	04	03	Set the data.
2	6	01	01	Set the data, and press PAUSE button.
3	1			Check that the IRIS display data (Note1) satisfies the specified value 1.
4	6	01	03	Set the data, and press PAUSE button.
5	1			Check that the IRIS display data (Note1) satisfies the specified value.2.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2	6	04	00	Set the data.
3	6	94	00	Set the data.
4	6	95	00	Set the data.
5	0	01	00	Set the data.

4. Offset Adjustment

Adjust so that the AGC OUT potential lies within the specified value of the digital clamp.

Subject	Not required
Measurement Point	DDS display data of LCD or TV monitor (Note1)
Measuring Instrument	
Adjustment Page	E
Adjustment Address	2D, 2E, 2F
Specified Value	70 to 90

Note 1: DDS display data of LCD or TV monitor.

CA 00 0000

CA 00 00XX

— Object data

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	D	11	02	Set the data, and press PAUSE button.
3	6	01	05	Set the data, and press PAUSE button.
4	E	0C	02	Set the data, and press PAUSE button.
5	6	04	1F	Set the data.
6	E	2D		Change the data and adjust the DDS display data (Note 1) to "80". (Rch offset adjustment)
7	E	2D		Press PAUSE button.
8	6	04	20	Set the data.
9	E	2E		Change the data and adjust the DDS display data (Note 1) to "80". (Gch offset adjustment)
10	E	2E		Press PAUSE button.
11	6	04	21	Set the data.
12	E	2F		Change the data and adjust the DDS display data (Note 1) to "80". (Bch offset adjustment)
13	E	2F		Press PAUSE button.

Processing after Completing Adjustments

Order	Page	Address	Data	Procedure
1	D	11	00	Set the data, and press PAUSE button.
2	E	0C	00	Set the data, and press PAUSE button.
3	0	01	00	Set the data.
4	6	01	00	Set the data, and press PAUSE button.
5	6	04	00	Set the data.
6				Turn off the power and turn on again.

5. Flange Back Adjustment (Using Minipattern Box)

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

Subject	Siemens star chart with ND filter for the minipattern box (Note1)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	24 to 2B, 36 to 3D, 5D

Note1: Dark Siemens star chart.

Note2: Check that the data of page: 6, address: 02 is "00". If not, to page: 6, address: 01, set data: 00, and press the PAUSE button.

Switch setting:

ND FILTER OFF
(The data of page: 6, address: 9D is "00".)

Preparations:

- 1) The minipattern box is installed as shown in the following figure.

Note: The attachment lenses are not used.

- 2) Install the minipattern box so that the distance between it and the front of the protection glass of the camcorder is less than 3cm. (Remove the lens hood.)
- 3) Make the height of the minipattern box and the camcorder equal.
- 4) Check that the output voltage of the regulated power supply is the specified voltage.
- 5) Check that at both the zoom lens TELE end and WIDE end, the center of the Siemens star chart and center of the exposure screen coincide.

Specified voltage: The specified voltage varies according to the minipattern box, so adjust the power supply output voltage to the specified voltage written on the sheet which is supplied with the minipattern box.

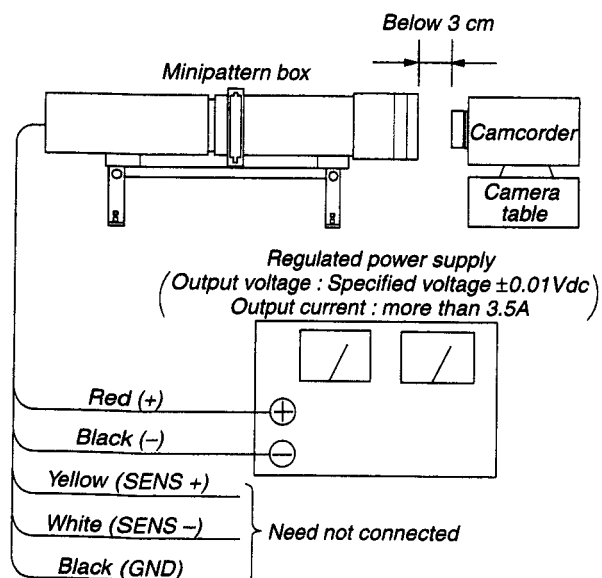


Fig. 5-1-8.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	01	13	Set the data, and press PAUSE button. (Note3)
3	6	01	27	Set the data, and press PAUSE button.
4	6	02		Check that the data changes to "01". (Note4)
5	F	2A		Check that the data is "00" to "07".

Note3: Don't touch the zoom switch. If you touch the zoom switch, the zoom center adjustment data will be rewritten in the value which isn't correct.

Note4: The adjustment data will be automatically input to page: F, address: 24 to 2B, 36 to 3D, 5D.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2	6	02	00	Set the data.
3	0	01	00	Set the data.
4				Turn off the power and turn on again.
5				Perform "Flange Back Check".

6. Flange Back Adjustment (Using Flange Back Adjustment Chart and Subject More Than 500m Away)

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

6-1. Flange Back Adjustment (1)

Subject	Flange back adjustment chart (2.0 m from the front of the protection glass) (Luminance: 230 ± 30 lux)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	24 to 2B, 36 to 3D, 5D

Note1: Check that the data of page: 6, address: 02 is "00". If not, to page: 6, address: 01, set data: 00, and press the PAUSE button.

Switch setting:

ND FILTER OFF
(The data of page: 6, address: 9D is "00".)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	01	13	Set the data, and press PAUSE button. (Note2)
3	6	01	15	Set the data, and press PAUSE button.
4	6	02		Check that the data changes to "01". (Note3)
5	F	2A		Check that the data is "00" to "07".

Note2: Don't touch the zoom switch. If you touch the zoom switch, the zoom center adjustment data will be rewritten in the value which isn't correct.

Note3: The adjustment data will be automatically input to page: F, address: 24 to 2B, 36 to 3D, 5D.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2				Turn off the power and turn on again.
3				Perform "Flange Back Adjustment (2)"

6-2. Flange Back Adjustment (2)

Perform this adjustment after performing "Flange Back Adjustment (1)".

Subject	Subject more than 500m away (Subjects with clear contrast such as buildings, etc.)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	24 to 2B, 36 to 3D, 5D

Note1: Check that the data of page: 6, address: 02 is "00". If not, to page: 6, address: 01, set data: 00, and press the PAUSE button.

Preparations:

- 1) Set the zoom lens to the TELE end and expose a subject that is more than 500 m away (subject with clear contrast such as building, etc.). (Nearby subjects less than 500 m away should not be in the screen.)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	01	13	Set the data, and press PAUSE button. (Note2)
				Place a ND filter on the lens so that the optimum image is obtain.
3	6	01	29	Set the data, and press PAUSE button.
4	6	02		Check that the data changes to "01". (Note3)

Note2: Don't touch the zoom switch. If you touch the zoom switch, the zoom center adjustment data will be rewritten in the value which isn't correct.

Note3: The adjustment data will be automatically input to page: F, address: 24 to 2B, 36 to 3D, 5D.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2				Turn off the power and turn on again.
3				Perform "Flange Back Check".

7. Flange Back Check

Subject	Siemens star (2.0m from the front of the protection glass) (Luminance : approx. 300 ± 50 lux)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Specified Value	Focused at the TELE end and WIDE end.

Checking method:

- 1) Place the Siemens star 2.0m from the front of the protection glass.
- 2) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appear on the image.
- 3) Shoot the Siemens star with the zoom TELE end.
- 4) Turn on the auto focus.
- 5) Check that the lens is focused.
- 6) Turn off the auto focus.
- 7) While observe the TV monitor, move the zoom to the WIDE end and check that the lens is focused.

8. Picture Frame Setting

Subject	Color bar chart (Color bar standard picture frame) (95cm from the front of the protection glass)
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor
Specified Value	$A=B$, $C=D$, $t=0 \pm 0.1$ msec

Switch setting:

- 1) ND FILTER OFF
(The data of page: 6, address: 9D is "00".)
- 2) STEADY SHOT (Menu setting) OFF

Setting method:

Order	Page	Address	Data	Procedure
1	6	2C	01	Set the data.
2	6	90	28	Set the data.
3	6	91	02	Set the data.
4	6	92	6E	Set the data.
5	6	93	49	Set the data.
6	6	01	79	Set the data, and press PAUSE button.
7				Adjust the camera direction, and set to the specified position.
8				Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "Color bar standard frame".
9	6	01	00	Set the data, and press the PAUSE button.

Check on the oscilloscope

1. Horizontal period

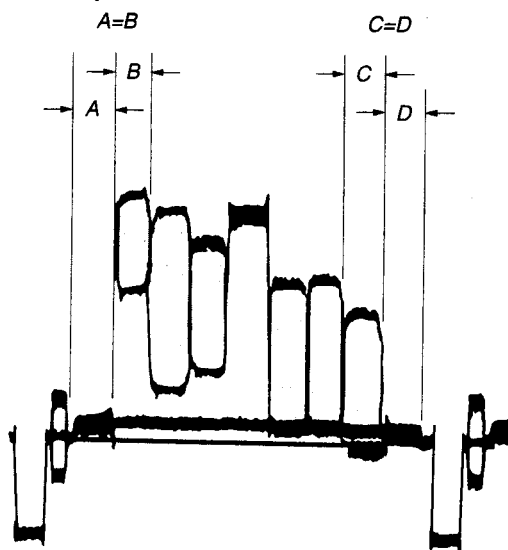


Fig. 5-1-9.

2. Vertical period

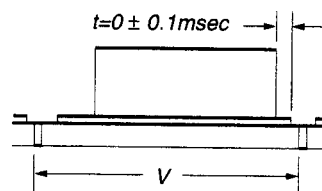


Fig. 5-1-10.

Color on the TV monitor

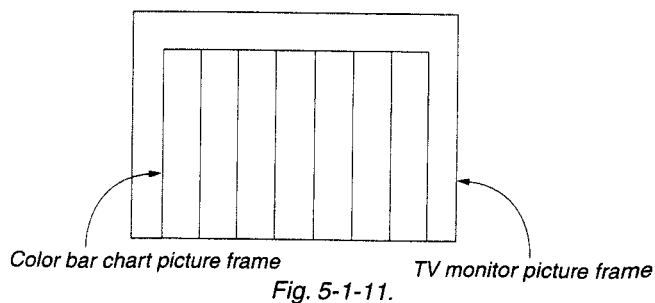


Fig. 5-1-11.

9. Pre White Balance Data Input

At 3200k, input the pre white balance standard data.

Subject	Clear chart (Color bar standard picture frame)
Adjustment Page	E
Adjustment Address	2A, 2B

Note1: After the power is turned on, this adjustment can be done only once.

Switch setting:

ND FILTER OFF
(The data of page: 6, address: 9D is "00".)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	02	00	Set the data.
3	F	20	00	Set the data, and press PAUSE button.
4	F	21	15	Set the data, and press PAUSE button.
5	F	22	00	Set the data, and press PAUSE button.
6	F	23	2E	Set the data, and press PAUSE button.
7	F	16		Set the following data, and press PAUSE button. 03: DSR-250 (NTSC) 83: DSR-250P (PAL)
8	6	01	7F	Set the data, and press PAUSE button.
9	6	01	7D	Set the data, and press PAUSE button. (Note)
10	6	02		Check that the data changes to "01".

Note: The adjustment data will be automatically input to page: E, address: 2A and 2B.

Processing after Completing Adjustments

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2	6	02	00	Set the data.
3	F	16		Set the following data, and press PAUSE button. 13: DSR-250 (NTSC) 93: DSR-250P (PAL)
4	0	01	00	Set the data.
5				Perform "Auto White Balance Standard Data Input".

10. Auto White Balance Standard Data Input

At 3200K, input the white balance standard data.

Subject	Clear chart (Color bar standard picture frame)
Adjustment Page	F
Adjustment Address	20 to 23

Note1: After the power is turned on, this adjustment can be done only once.

Note2: Check that the data of page: 6, address: 02 is "00". If not, to page: 6, address: 01, set data: 00, and press the PAUSE button.

Switch setting:

ND FILTER OFF
(The data of page: 6, address: 9D is "00".)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	01	11	Set the data, and press PAUSE button.
3	6	01	0B	Set the data, and press PAUSE button. (Note)
4	6	02		Check that the data changes to "01".

Note: The adjustment data will be automatically input to page: F, address: 20 to 23.

Processing after Completing Adjustments

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2	6	02	00	Set the data.
3	0	01	00	Set the data.

11. MAX GAIN Adjustment

Setting the minimum illumination.

If it is not consistent, the image level required for taking subjects in low illuminance will not be produced (dark).

Subject	Clear chart (Color bar standard picture frame)
Adjustment Page	F
Adjustment Address	2C

Switch setting:

ND FILTER OFF
(The data of page: 6, address: 9D is "00".)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	02	00	Set the data.
3	6	96	00	Set the data.
4	6	97	65	Set the data.
5	6	01	6F	Set the data, and press PAUSE button. (Note)
6	6	02		Check that the data changes to "01".

Note: The adjustment data will be automatically input to page: F, address: 2C.

Processing after Completing Adjustments

Order	Page	Address	Data	Procedure
1	6	96	00	Set the data.
2	6	97	00	Set the data.
3	6	01	00	Set the data, and press PAUSE button.
4	6	02	00	Set the data.
5	0	01	00	Set the data.

12. LV Standard Data Input

Adjust the normal coefficient of the light value.

Subject	Clear chart (Color bar standard picture frame)
Measurement Point	Display data of page 1 (Note2)
Measuring Instrument	Adjustment remote commander
Adjustment Page	F
Adjustment Address	3E, 3F
Specified Value	0FE0 to 1020

Note1: Check that the data of page: 6, address: 02 is "00". If not, turn the power of the unit OFF/ON.

Note2: Displayed data of page 1 of the adjustment remote commander.
1 : XX : XX

————— LV data

Switch setting:

ND FILTER OFF
(The data of page: 6, address: 9D is "00".)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	16	02	Set the data, and press PAUSE button.
3				Wait for 5 seconds.
4	6	01	0D	Set the data, and press PAUSE button. (Note3)
5	6	02		Check that the data changes to "01".
6	6	04	1E	Set the data.
7	1			Check that the LV data (Note2) satisfies the specified value. If not, repeat from step 2.

Note3: The adjustment data will be automatically input to page: F, address: 3E and 3F.

Processing after Completing Adjustments

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2	6	02	00	Set the data.
3	6	04	00	Set the data.
4	6	16	00	Set the data, and press PAUSE button.
5	0	01	00	Set the data.

13. White Balance ND Filter 1 Compensation

Compensate the white balance deviation when ND FILTER switch is "1".

Subject	Clear chart (Color bar standard picture frame)
Adjustment Page	F
Adjustment Address	4A, 4B

Note1: After the power is turned on, this adjustment can be done only once.

Note2: Check that the data of page: 6, address: 02 is "00". If not, to page: 6, address: 01, set data: 00, and press the PAUSE button.

Switch setting:

ND FILTER 1
(The data of page: 6, address: 9D is "01".)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	01	11	Set the data, and press PAUSE button.
3	6	01	09	Set the data, and press PAUSE button. (Note)
4	6	02		Check that the data changes to "01".

Note: The adjustment data will be automatically input to page: F, address: 4A and 4B.

Processing after Completing Adjustments

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2	6	02	00	Set the data.
3	0	01	00	Set the data.

14. White Balance ND Filter 2 Compensation

Compensate the white balance deviation when ND FILTER switch is "2".

Subject	Clear chart (Color bar standard picture frame)
Adjustment Page	E
Adjustment Address	8E, 8F

Note1: After the power is turned on, this adjustment can be done only once.

Note2: Check that the data of page: 6, address: 02 is "00". If not, to page: 6, address: 01, set data: 00, and press the PAUSE button.

Switch setting:

ND FILTER 2
(The data of page: 6, address: 9D is "02".)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	01	CF	Set the data, and press PAUSE button.
3	6	01	CD	Set the data, and press PAUSE button. (Note)
4	6	02		Check that the data changes to "01".

Note: The adjustment data will be automatically input to page: E, address: 8E and 8F.

Processing after Completing Adjustments

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2	6	02	00	Set the data.
3	0	01	00	Set the data.
4				Set ND FILTER switch to "OFF".

15. Auto White Balance Adjustment

Adjust to the proper auto white balance output data.

If it is not correct, auto white balance and color reproducibility will be poor.

Subject	Clear chart (Color bar standard picture frame)
Filter	Filter C14 for color temperature correction
Adjustment Page	F
Adjustment Address	34, 35

Note1: After the power is turned on, this adjustment can be done only once.

Note2: Check that the data of page: 6, address: 02 is "00". If not, to page: 6, address: 01, set data: 00, and press the PAUSE button.

Switch setting:

ND FILTER OFF
(The data of page: 6, address: 9D is "00".)

Adjusting method:

Order	Page	Address	Data	Procedure
1				Place the C14 filter for color temperature correction on the lens.
2	0	01	01	Set the data.
3	6	02	00	Set the data.
4	6	01	83	Set the data, and press PAUSE button.
5	6	01	81	Set the data, and press PAUSE button. (Note)
6	6	02		Check that the data changes to "01".

Note: The adjustment data will be automatically input to page: F, address: 34 and 35.

Processing after Completing Adjustments

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2	6	02	00	Set the data.
3	0	01	00	Set the data.

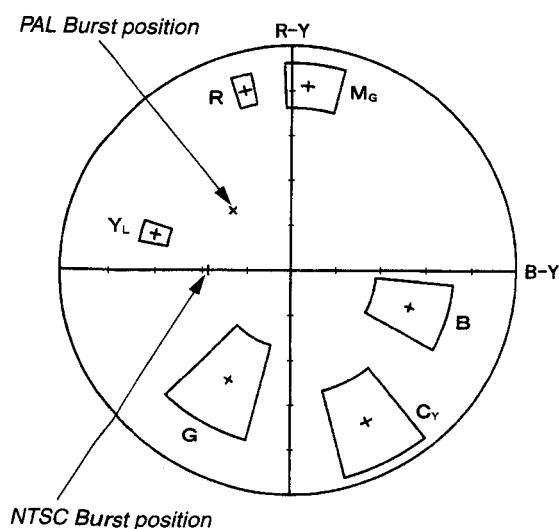


Fig. 5-1-12.

16. Color Reproduction Adjustment (ND Filter OFF)

When the ND FILTER switch is "OFF", adjust the color difference matrix coefficient so that proper color reproduction is produced.

Subject	Color bar chart (Color bar standard picture frame)
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	44, 45, 46, 47
Specified Value	All color luminance points should settle within each color reproduction frame. (Fig. 5-1-12)

Note1: After the power is turned on, this adjustment can be done only once.

Note2: Check that the data of page: 6, address: 02 is "00". If not, to page: 6, address: 01, set data: 00, and press the PAUSE button.

Switch setting:

ND FILTER OFF
(The data of page: 6, address: 9D is "00".)

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that the picture frame is set to the specified position. (Refer to "8. Picture Frame Setting".)
2	0	01	01	Set the data.
3	F	5E	2D	Set the data, and press PAUSE button.
4	F	44	00	Set the data, and press PAUSE button.
5	F	45	00	Set the data, and press PAUSE button.
6	F	46	20	Set the data, and press PAUSE button.
7	F	47	20	Set the data, and press PAUSE button.
8	6	01	AB	Set the data, and press PAUSE button.
9	6	01	A9	Set the data, and press PAUSE button. (Note)
10	6	02		Check that the data changes to "01".
11				Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame. (Fig. 5-1-12)
12				Check that all color luminance points settle within each color reproduction frame. (Fig. 5-1-12)

Note: The adjustment data will be automatically input to page: F, address: 44 to 47.

Processing after Completing Adjustments

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2	6	02	00	Set the data.
3	F	5E	1D	Set the data, and press PAUSE button.
3	0	01	00	Set the data.

17. Color Reproduction Adjustment (ND Filter 1)

When the ND FILTER switch is "1", adjust the color difference matrix coefficient so that proper color reproduction is produced.

Subject	Color bar chart (Color bar standard picture frame)
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	E
Adjustment Address	62, 63, 64, 65
Specified Value	All color luminance points should settle within each color reproduction frame. (Fig. 5-1-12)

Note1: After the power is turned on, this adjustment can be done only once.

Note2: Check that the data of page: 6, address: 02 is "00". If not, to page: 6, address: 01, set data: 00, and press the PAUSE button.

Switch setting:

- 1) ND FILTER 1
(The data of page: 6, address: 9D is "01".)

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that the picture frame is set to the specified position. (Refer to "8. Picture Frame Setting".)
2	0	01	01	Set the data.
3	F	5E	2D	Set the data, and press PAUSE button.
4	E	62	00	Set the data, and press PAUSE button.
5	E	63	00	Set the data, and press PAUSE button.
6	E	64	20	Set the data, and press PAUSE button.
7	E	65	20	Set the data, and press PAUSE button.
8	6	01	C3	Set the data, and press PAUSE button.
9	6	01	C1	Set the data, and press PAUSE button. (Note)
10	6	02		Check that the data changes to "01".
11				Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame. (Fig. 5-1-12)
12				Check that all color luminance points settle within each color reproduction frame. (Fig. 5-1-12)

Note: The adjustment data will be automatically input to page: E, address: 62 to 65.

Processing after Completing Adjustments

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2	6	02	00	Set the data.
3	F	5E	1D	Set the data, and press PAUSE button.
4	0	01	00	Set the data.

18. Color Reproduction Adjustment (ND Filter 2)

When the ND FILTER switch is "2", adjust the color difference matrix coefficient so that proper color reproduction is produced.

Subject	Color bar chart (Color bar standard picture frame)
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	E
Adjustment Address	90, 91, 92, 93
Specified Value	All color luminance points should settle within each color reproduction frame. (Fig. 5-1-12)

Note1: After the power is turned on, this adjustment can be done only once.

Note2: Check that the data of page: 6, address: 02 is "00". If not, to page: 6, address: 01, set data: 00, and press the PAUSE button.

Switch setting:

- 1) ND FILTER 2
(The data of page: 6, address: 9D is "02".)

Adjusting method:

Order	Page	Address	Data	Procedure
1				Check that the picture frame is set to the specified position. (Refer to "8. Picture Frame Setting".)
2	0	01	01	Set the data.
3	F	5E	2D	Set the data, and press PAUSE button.
4	E	90	00	Set the data, and press PAUSE button.
5	E	91	00	Set the data, and press PAUSE button.
6	E	92	20	Set the data, and press PAUSE button.
7	E	93	20	Set the data, and press PAUSE button.
8	6	01	CB	Set the data, and press PAUSE button.
9	6	01	C9	Set the data, and press PAUSE button. (Note)
10	6	02		Check that the data changes to "01".
11				Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame. (Fig. 5-1-12)
12				Check that all color luminance points settle within each color reproduction frame. (Fig. 5-1-12)

Note: The adjustment data will be automatically input to page: E, address: 90 to 93.

Processing after Completing Adjustments

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2	6	02	00	Set the data.
3	F	5E	1D	Set the data, and press PAUSE button.
4	0	01	00	Set the data.
5				Set ND FILTER switch to "OFF".

19. White Balance Check

Subject	Clear chart (Color bar standard picture frame)
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.3 (2 sheets)
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 5-1-13. A to B

Switch setting:

ND FILTER OFF
(The data of page: 6, address: 9D is "00".)

Checking method:

Order	Page	Address	Data	Procedure
				Indoor white balance check
1				Check that the lens is not covered with either filter.
2	6	01	0F	Set the data, and press PAUSE button.
3				Check that the center of the white luminance point is within the circle shown Fig. 5-1-13. A.
				Outdoor white balance check
4				Place the C14 filter on the lens.
5	6	01	3F	Set the data, and press PAUSE button.
6				Check that the center of the white luminance point is within the circle shown Fig. 5-1-13. B.
7				Remove the C14 filter.
				Indoor white balance data check
8				Place the ND filter 1.6 (1.0+0.3+0.3) on the lens.
9	6	01	0F	Set the data, and press PAUSE button.
10				Wait for 2 seconds.
11	0	01	01	Set the data.
12	F	10	A1	Set the data, and press PAUSE button.
13	F	11	04	Set the data, and press PAUSE button.
14	1			Check that the second digit of the display data (Note) is an odd number. Specified value: 1 : XX : <u>XX</u> Odd number
15	6	04	06	Set the data.
16	1			Check that the display data (Note) satisfies the specified value. Specified value: 0000 to 0C50

Note: Displayed data of the adjustment remote commander.

1 : XX : XX
 Display data

Processing after Completing Adjustments

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2	6	04	00	Set the data.
3	F	10	00	Set the data, and press PAUSE button.
4	F	11	00	Set the data, and press PAUSE button.
5	0	01	00	Set the data.

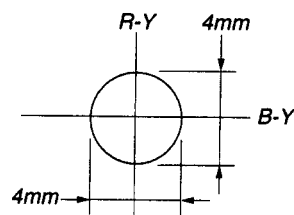


Fig. 5-1-13. (A)

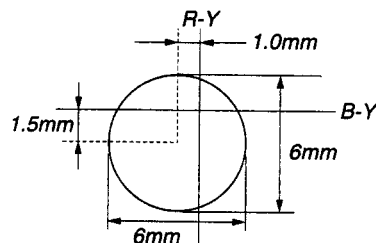


Fig. 5-1-13. (B)

20. Steady Shot Adjustment

- This adjustment is performed only when replacing the angular velocity sensor.

Although this adjustment need not be performed when the circuit is damaged, etc., check the operations.

- Note down the sensitivity displayed on the angular velocity sensor of the repair parts. At this time, note down also to which board it was attached to.

Be sure to check because if attached incorrectly, the screen will vibrate up and down or left and right during hand-shake correction operations.

Precautions on the Parts Replacement

There are two types of repair parts.

Type A: ENC03JA

Type B: ENC03JB

Replace the broken sensor with a same type sensor. If replace with other type parts, the image will vibrate up and down or left and right during hand-shake correction operations. After replacing, re-adjust according to the adjusting method after replacement.

Precautions on Angular Velocity Sensor

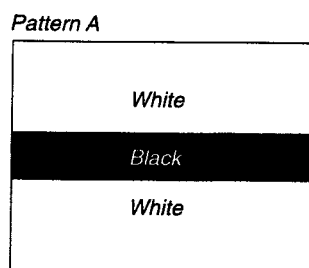
The sensor incorporates a precision oscillator. Handle it with care as if it dropped, the balance of the oscillator will be disrupted and operations will not be performed properly.

Switch setting:

STEADY SHOT (Menu) ON
DIGITAL ZOOM (Menu) OFF

20-1. Steady Shot Adjustment (1)

Subject	Pattern A (1.5m from the front of the lens)
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope (V period)
Adjustment Page	F
Adjustment Address	41



A4 size (297mm × 210mm)

Fig. 5-1-14.

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: F, address: EA, set data: 76, and press the PAUSE button of the adjustment remote commander.
- 3) Expose pattern A with the zoom TELE end.
- 4) Adjust the focus.
- 5) Measure the vertical position SV1 (msec) of the falling edge of the waveform. (Oscilloscope is V period)
- 6) Select page: F, address: EA, set data: 8A, and press the PAUSE button.
- 7) Measure the vertical position SV2 (msec) of the falling edge of the waveform. (Oscilloscope is V period)
- 8) Obtain D_{41}' using the following equation (decimal calculation).

NTSC model

$$D_{41}' = \frac{1.53}{SV1 - SV2} \times \frac{0.6}{\text{PITCH sensor sensitivity}} \times 99$$

PAL model

$$D_{41}' = \frac{1.84}{SV1 - SV2} \times \frac{0.6}{\text{PITCH sensor sensitivity}} \times 99$$

Note: PITCH sensor sensitivity (SE601 of SE-116 board) is written only on the repair parts.

- 9) Convert D_{41}' to hexadecimal notation, and obtain D_{41} . (Round off to one decimal place)
(Refer to Table 5-4-1. "Hexadecimal notation-Decimal notation conversion table" of "5-4. Service Mode".)
- 10) Select page: F, address: 41, set data: D_{41} , and press the PAUSE button.

Processing after Completing Adjustments

- 1) Select page: F, address: EA, set data: 80, and press the PAUSE button of the adjustment remote commander.
- 2) Select page: 0, address: 01, and set data: 00.
- 3) Check that the steady shot operation is performed normally.

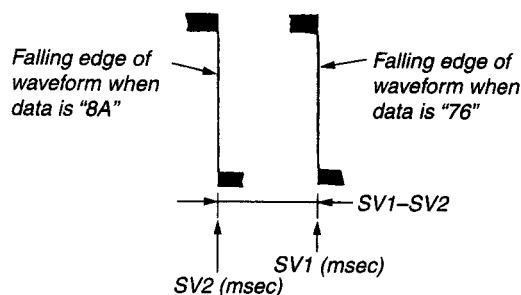
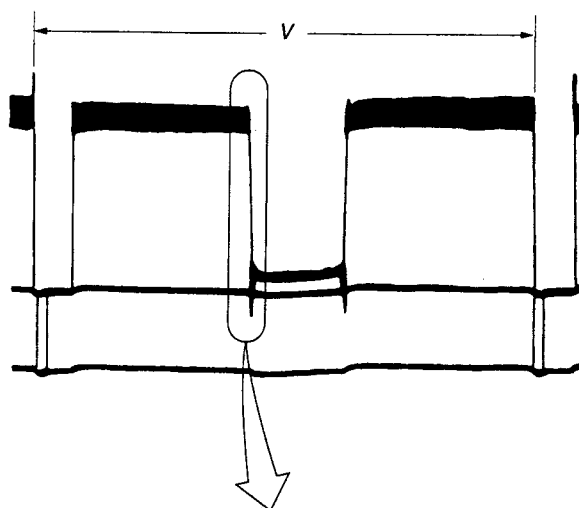


Fig. 5-1-15.

20-2. Steady Shot Adjustment (2)

Subject	Pattern B (1.5m from the front of the lens)
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope (H period)
Adjustment Page	F
Adjustment Address	42

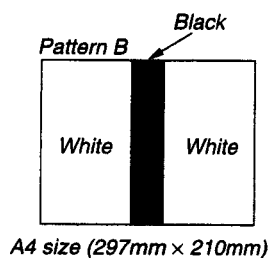


Fig.5-1-16.

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: F, address: EB, set data: 76, and press the PAUSE button of the adjustment remote commander.
- 3) Expose pattern B with the zoom TELE end.
- 4) Adjust the focus.
- 5) Measure the horizontal position SH1 (μ sec) of the falling edge of the waveform. (Oscilloscope is H period)
- 6) Select page: F, address: EB, set data: 8A, and press the PAUSE button.
- 7) Measure the horizontal position SH2 (μ sec) of the falling edge of the waveform. (Oscilloscope is H period)
- 8) Obtain D₄₂' using the following equation (decimal calculation).

$$D_{42}' = \frac{3.90}{SH1 - SH2} \times \frac{0.6}{\text{YAW sensor sensitivity}} \times 99$$

Note: YAW sensor sensitivity (SE600 of SE-116 board) is written only on the repair parts.

- 9) Convert D₄₂' to hexadecimal notation, and obtain D₄₂. (Round off to one decimal place)
(Refer to Table 5-4-1. "Hexadecimal notation-Decimal notation conversion table" of "5-4. Service Mode".)
- 10) Select page: F, address: 42, set data: D₄₂, and press the PAUSE button.

Processing after Completing Adjustments

- 1) Select page: F, address: EB, set data: 80, and press the PAUSE button of the adjustment remote commander.
- 2) Select page: 0, address: 01, and set data: 00.
- 3) Check that the steady shot operation is performed normally.

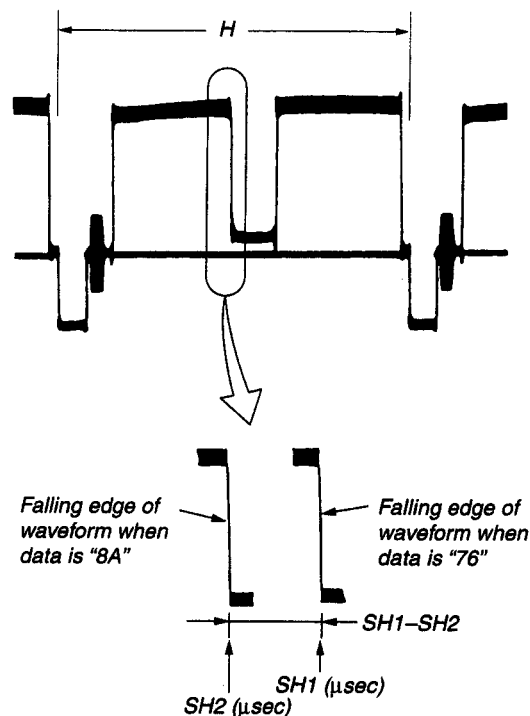


Fig. 5-1-17.

1-4. LCD SYSTEM ADJUSTMENT

Note 1: The back light (fluorescent tube) is driven by a high voltage AC power supply. Therefore, do not touch the back light holder to avoid electrical shock.

Note 2: When replacing the LCD unit, be careful to prevent damages caused by static electricity.

Switch setting:

LCD ON

[Adjusting connector]

Most of the measuring points for adjusting the LCD system are concentrated in CN2105 of the PD-126 board. The following table shows the Pin No. and signal name of CN2105.

Pin No.	Signal Name
1	VG
2	COM
3	GND
4	PSIG
5	HSY

Table 5-1-9.

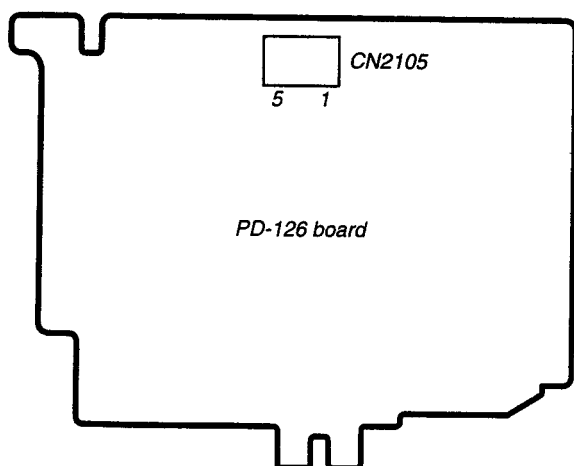


Fig. 5-1-18.

1. VCO Adjustment (PD-126 board)

Set the VCO free-run frequency. If deviated, the LCD screen will be blurred.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ⑤ of CN2105 (HSY)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	A2, A3
Specified Value	$f = 15734 \pm 30\text{Hz}$ (NTSC) $f = 15625 \pm 30\text{Hz}$ (PAL)

Note1: NTSC: DSR-250
PAL: DSR-250P

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	D	A2		Change the data and set the VCO frequency (f) to the specified value.
3	D	A2		Press PAUSE button.
4	D	A2		Read the data, and this data is named D_{A2} .
5				Convert D_{A2} to decimal notation, and obtain D_{A2}' . (Note2)
6				Calculate D_{A3}' using following equations (Decimal calculation) NTSC model: When $D_{A2}' \leq 221$ $D_{A3}' = D_{A2}' + 34$ When $D_{A2}' > 221$ $D_{A3}' = 255$ PAL model: When $D_{A2}' \geq 34$ $D_{A3}' = D_{A2}' - 34$ When $D_{A2}' < 34$ $D_{A3}' = 00$
7				Convert D_{A3}' to a hexadecimal number, and obtain D_{A3} . (Note2)
8	D	A3	D_{A3}	Set the data, and press PAUSE button.
9	0	01	00	Set the data.

Note2: Refer to "Table 5-4-1. Hexadecimal-decimal Conversion Table".

2. Bright Adjustment (PD-126 board)

Set the D range of the RGB decoder used to drive the LCD to the specified value. If deviated, the LCD screen will become blackish or saturated (whitish).

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ① of CN2105 (VG)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	A5
Specified Value	$A = 7.8 \pm 0.05V$

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	D	A5		Change the data and set the voltage (A) between the reversed waveform pedestal and non-reversed waveform pedestal to the specified value.
3	D	A5		Press PAUSE button.
4	0	01	00	Set the data.

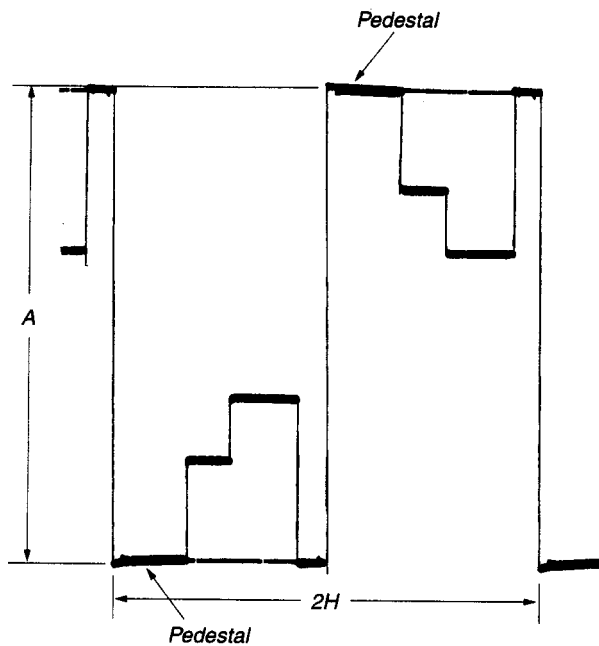


Fig. 5-1-19.

3. Black Limit Adjustment (PD-126 board)

Set the dynamic range of the LCD driver to an appropriate level. If deviated, the LCD screen will become blackish or saturated (whitish).

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ④ of CN2105 (PSIG)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	A6
Specified Value	$A = 8.50 \pm 0.05V$

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	2	0E	61	Set the data.
3	2	0F		Set the following data. 5B: DSR-250 (NTSC) 53: DSR-250P (PAL)
4	D	A6		Change the data and set the PSIG signal amplitude (A) to the specified value. (The data should be "00" to "0F".)
5	D	A6		Press PAUSE button.
6	2	0E	00	Set the data.
7	2	0F	00	Set the data.
8	0	01	00	Set the data.

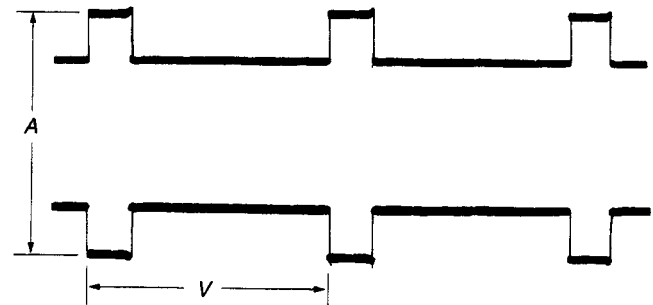


Fig. 5-1-20.

4. Contrast Adjustment (PD-126 board)

Set the level of the VIDEO signal for driving the LCD to the specified level. If deviated, the screen image will be blackish or saturated.

	VTR stop
Signal	No signal
Measurement Point	Pin ① of CN2105 (VG)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	AA
Specified Value	$A = 3.10 \pm 0.05V$

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	D	AA		Change the data and set the voltage (A) between the 3 steps peak and pedestal to the specified value. (The data should be "00" to "7F".)
3	D	AA		Press PAUSE button.
4	0	01	00	Set the data.
5				Check that the specified value of "Bright Adjustment" is satisfied.

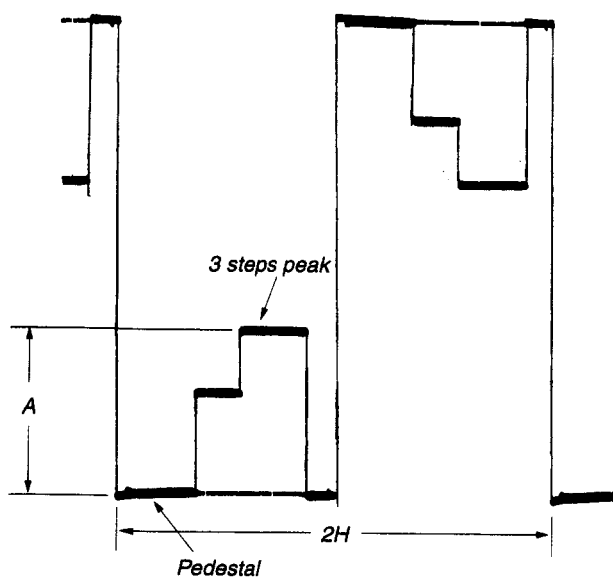


Fig. 5-1-21.

5. Center Level Adjustment (PD-126 board)

Set the video signal center level of LCD panel to an appropriate level.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ① of CN2105 (VG)
Measuring Instrument	Digital voltmeter
Adjustment Page	D
Adjustment Address	AB
Specified Value	$A = 7.00 \pm 0.05Vdc$

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	3	0C	60	Set the data, and press PAUSE button.
3	3	22	08	Set the data, and press PAUSE button.
4	D	AB		Change the data and set the DC voltage (A) to the specified value. (The data should be "00" to "7F".)
5	D	AB		Press PAUSE button.
6	3	0C	00	Set the data, and press PAUSE button.
7	3	22	00	Set the data, and press PAUSE button.
8	0	01	00	Set the data.

6. V-COM Adjustment (PD-126 board)

Set the DC bias of the common electrode drive signal of LCD to the specified value.

If deviated, the LCD display will move, producing flicker and conspicuous vertical lines.

Mode	VTR stop
Signal	No signal
Measurement Point	Check on LCD display
Measuring Instrument	
Adjustment Page	D
Adjustment Address	A4
Specified Value	The brightness difference between the section A and section B is minimum.

Note: Perform "Bright Adjustment", "Black Limit Adjustment", "Contrast Adjustment" and "Center Level Adjustment" before this adjustment.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	D	B0		Write down the data.
3	D	B0	CA	Set the data, and press PAUSE button.
4	D	A4		Change the data so that the brightness of the section A and that of the section B is equal. (The data should be "80" to "BF".)
5	D	A4		Subtract 2 from the data.
6	D	A4		Press PAUSE button.
7	D	B0		Write the data that was written down in the step 2.
8	D	B0		Press PAUSE button.
9	0	01	00	Set the data.

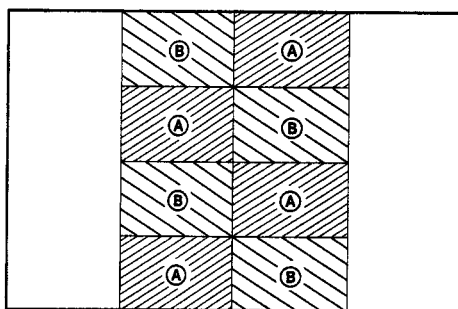


Fig. 5-1-22.

7. White Balance Adjustment (PD-126 board)

Correct the white balance.

If deviated, the reproduction of the LCD screen may degenerate.

Mode	VTR stop
Signal	No signal
Measurement Point	Check on LCD screen
Measuring Instrument	
Adjustment Page	D
Adjustment Address	A8, A9
Specified Value	The LCD screen should not be colored.

Note1: Check the white balance only when replacing the following parts. If necessary, adjust them.

1. LCD panel
2. Light induction plate
3. IC2101

Note2: Use the AC power adaptor.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	D	A8	85	Set the data, and press PAUSE button.
3	D	A9	75	Set the data, and press PAUSE button.
4	D	A9		Check that the LCD screen is not colored. If not colored, proceed to step 10.
5	D	A8		Change the data so that the LCD screen is not colored.
6	D	A8		Press PAUSE button.
7	D	A9		Change the data so that the LCD screen is not colored.
8	D	A9		Press PAUSE button.
9	D	A9		If the LCD screen is colored, repeat steps 5 to 9.
10	0	01	00	Set the data.

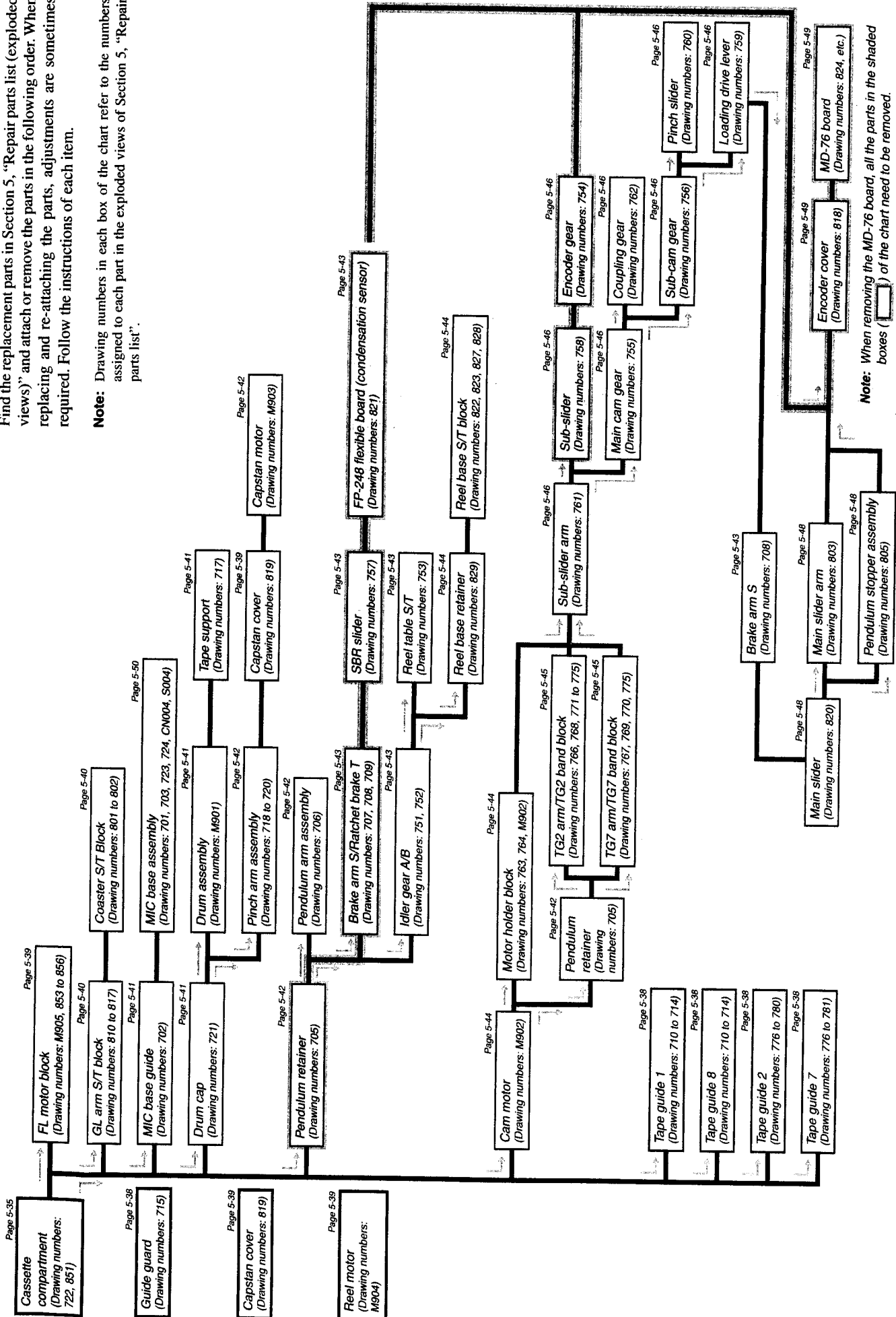
5-2. MECHANICAL SECTION ADJUSTMENT

INFORMATION

START

Find the replacement parts in Section 5, "Repair parts list (exploded views)" and attach or remove the parts in the following order. When replacing and re-attaching the parts, adjustments are sometimes required. Follow the instructions of each item.

Note: Drawing numbers in each box of the chart refer to the numbers assigned to each part in the exploded views of Section 5, "Repair parts list".

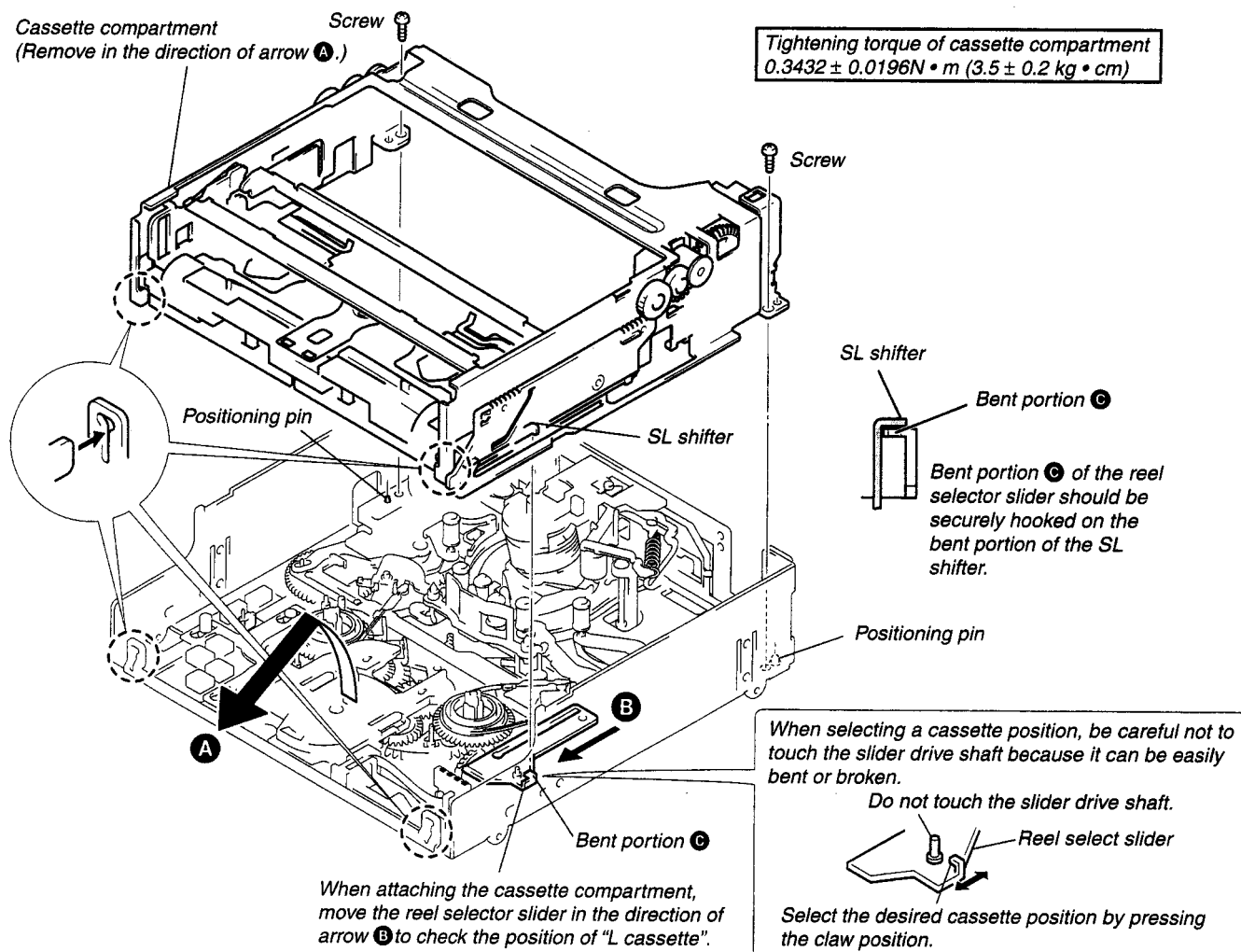


5-2-1. PARTS REPLACEMENT AND PREPARATION FOR ADJUSTMENT

2-1-1. ASSEMBLY/DISASSEMBLY OF CASSETTE COMPARTMENT

For details on disassembling the mechanism deck (R mechanism), refer to the Service Manual of the main unit in which the R mechanism is mounted.

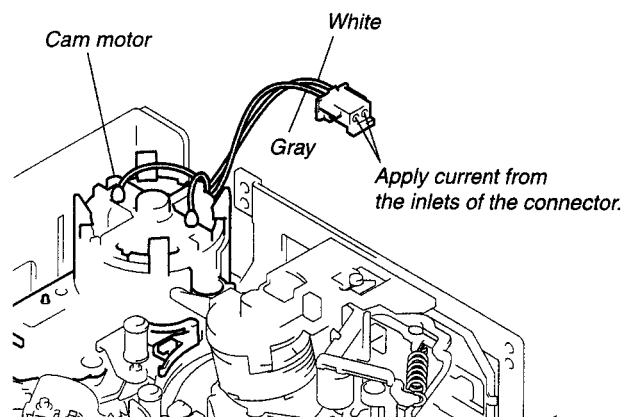
Before attaching or removing the cassette compartment, check the position of "L cassette".



2-1-2. HOW TO LOAD/UNLOAD

[Using the regulated power supply]

Note: Make sure to remove the connector of the cam motor from the board of the main unit and apply +5V current.

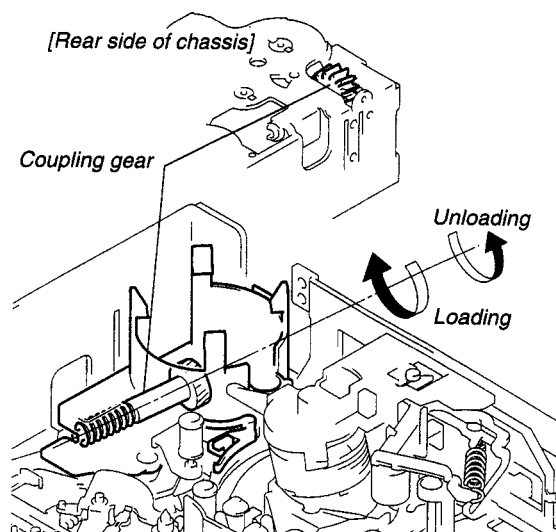


Loading : Apply positive polarity (+) of power supply to the gray wire and negative polarity (-) of power supply to the white wire.
Unloading : Apply negative polarity (-) of power supply to the gray wire and positive polarity (+) of power supply to the white wire.

[Manual: No cam motor]

Note: Remove the cam motor from the motor holder while referring to "Information" on page 5-34.

Rotate the coupling gear by hand to load or unload.



2-1-3. About Mode Selector II

• About Mode Selector II

3-1. OUTLINE

This unit is a mechanism drive tool which supplements the maintenance of each mechanism deck. Its functions are described below.

1. Manual test

A mode which drives the motor only while the switch is ON. It enables the operator to control the motor as desired.

2. Step test

A mode which drives the motor until the current condition detected by the sensor changes to another condition. It enables the movements made by the motor in each operation to be controlled while being detected.

3. Auto test

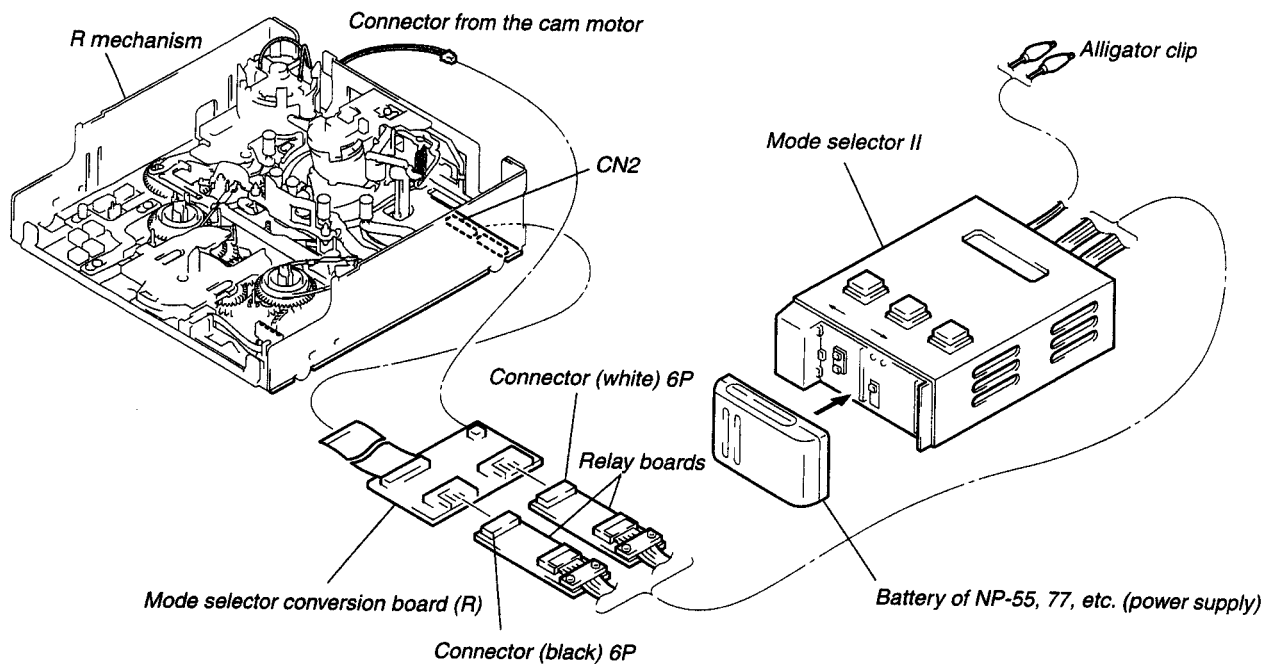
A mode that checks if the mechanism operates normally according to the condition shift table recorded in the unit for each mechanism deck. All the conditions of the decks are checked through a series of operations.
An error message is displayed and operations are stopped if incorrect shifts and conditions are detected.

3-2. MECHANISM CONDITION (POSITION) SHIFTING ORDER LIST

After selecting the mechanism deck, select one of the two test modes other than the auto test, and press the RVS or FF button to specify the mechanism state (position).

MD name					R mechanism
Code	A	B	C		
A	B	C	D		
0	1	1	1	1	ULE
0	0	1	1	2	DEW
1	0	1	1	3	LE
1	0	0	1	4	REW
1	0	1	0	5	FF
1	1	1	0	6	STOP
1	1	0	1	7	FWD / RVS

3-3. MODE SELECTOR II CONNECTION



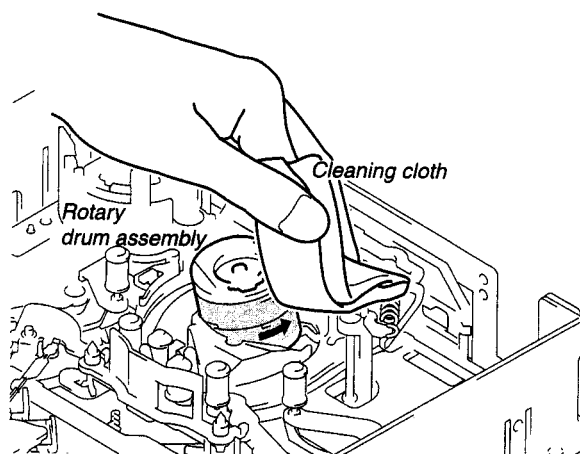
5-2-2. PERIODIC CHECK

- Carry out the following maintenance and periodic checks not only to fully display the functions and performance of the set, but also for the equipment and tape. After replacing, service the set as follows, regardless of the length of use.

2-2-1. CLEANING OF ROTARY DRUM ASSEMBLY

- Press a wiping cloth (J-12) moistened with cleaning fluid (J-11) against the rotary drum assembly gently, and clean it while rotating the rotary drum assembly slowly with your finger in the counterclockwise direction.

Note: Do not rotate the motor on power or rotate the rotary drum assembly in the clockwise direction with your finger. The head tip will also be damaged if the wiping cloth is moved perpendicularly against it. Therefore, be sure to follow the above instructions when cleaning the rotary drum assembly.

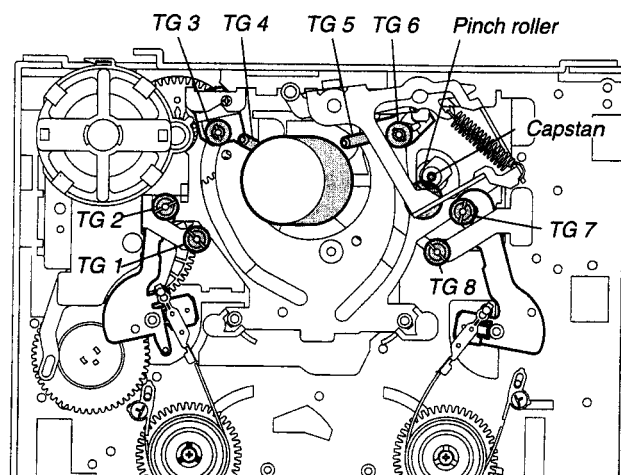


2-2-2. CLEANING OF TAPE PATH SYSTEM

- Clean the tape path systems (TG1 to TG8 and capstan) and the lower drum using a super fine applicator (J-13) moistened with cleaning fluid.

Note: Make sure that no oil or grease of the link mechanisms sticks to the super file applicator (J-13).

Note: Do not use a applicator moistened with alcohol to the other guide cleaning. But clean the pinch roller using alcohol.



2-2-3. PERIODIC CHECKS

Location of Maintenance and Check		Hours of Use (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
Driving System	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Be careful of the oil.
	Cleaning and degaussing of rotary drum assembly	○	○	○	○	○	○	○	○	○	○	Be careful of the oil.
	Capstan (Bearing)	—	◎	—	◎	—	◎	—	◎	—	◎	Make sure that no oil gets on the tape path surface.
	Gear	—	◎	—	◎	—	◎	—	◎	—	◎	
Performance Confirmation	Cam motor (worm block)	—	◎	—	◎	—	◎	—	◎	—	◎	X-3946-702-1 (M902)
	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD/RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○ : Cleaning ◎ : Applying grease ☆ : Confirmation

Note: When overhauling, refer to the checks above and replace parts.

Note: Greasing

Always use the specified grease. If the viscosity differs, various problems may occur.

(Use SG-941 for all parts of the R mechanism.)

Check the quantity of grease when installing the parts which is needed to apply the grease. When replacing these parts, make sure to apply the specified amount of grease.

• FOIL (SG-941): Part No. 7-662-601-39

5-2-3. PARTS REPLACEMENT

• Precaution

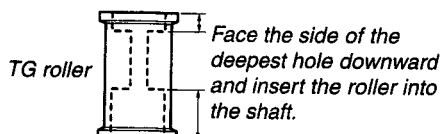
For details on disassembling the cabinets, boards and other parts, refer to "Disassembly" of the Service Manual of each model. For details on replacing parts (disassembly, assembly) of the mechanism deck, refer to "Information" on page 5-34.

2-3-1. TAPE GUIDE 1/8 AND GUIDE GUARD

Disassembly/Assembly

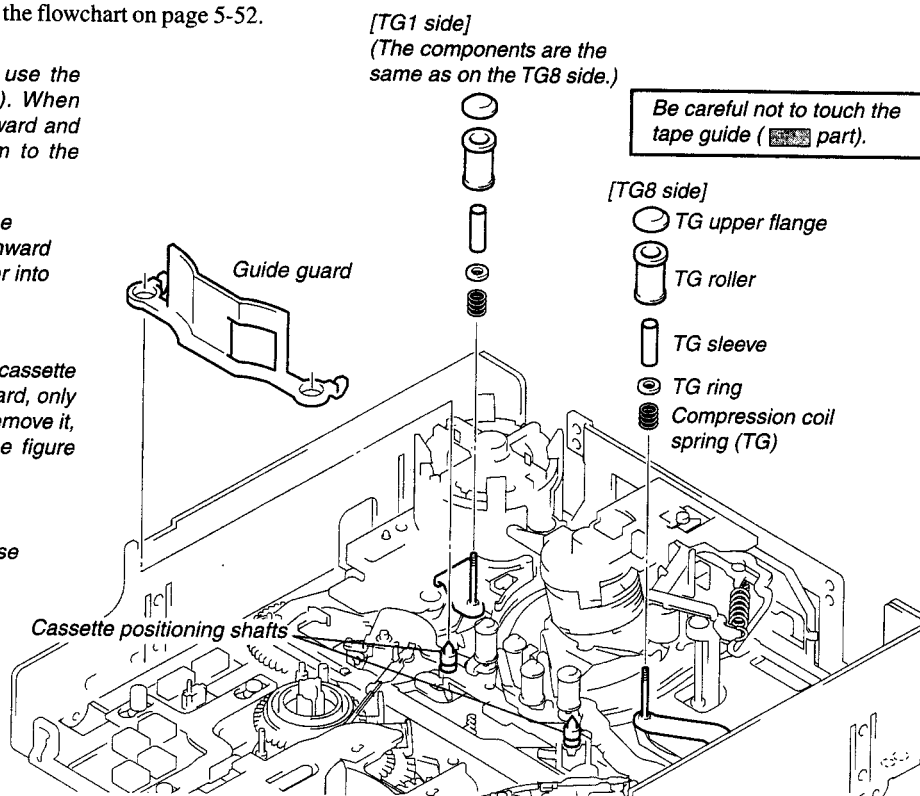
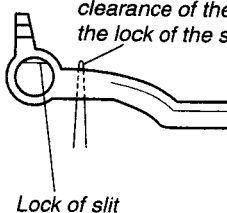
When the tape guide 1/8 is replaced or attached, perform each adjustment from Adjustment Start -2 of the flowchart on page 5-52.

To attach or remove the tape guide, use the screwdriver for the tape path (J-15). When attaching the TG rollers, check the upward and downward directions and attach them to the chassis shaft.



The guide guard is fixed at each slit of the cassette positioning shaft. To attach the guide guard, only insert it into the right and left holes. To remove it, use a pair of tweezers as shown in the figure below.

Insert a pair of tweezers into the clearance of the chassis to release the lock of the slit.

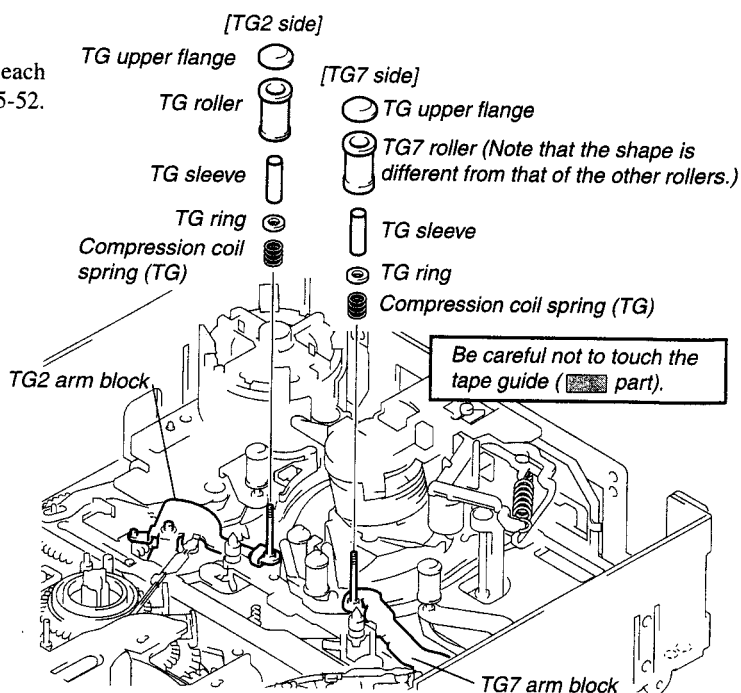
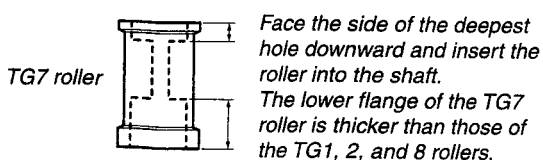


2-3-2. TAPE GUIDE 2/7

Disassembly/Assembly

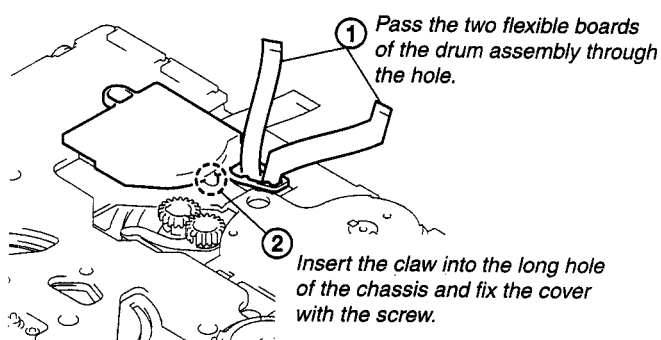
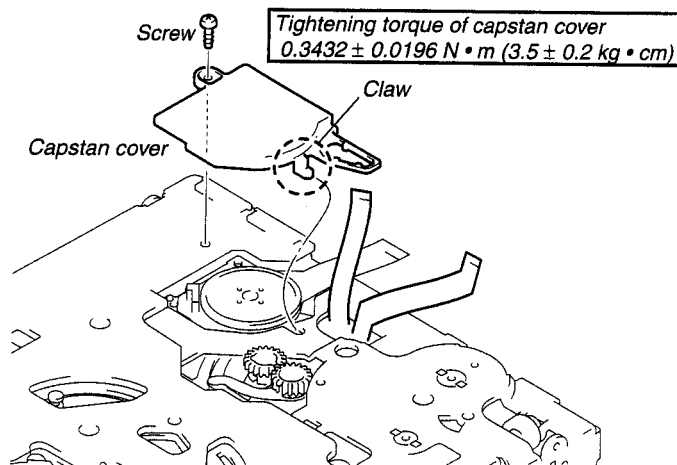
When the tape guide 2/7 is replaced or attached, perform each adjustment from Adjustment Start -3 of the flowchart on page 5-52.

To attach or remove the tape guide, use the screwdriver for the tape path (J-15). When attaching the TG rollers, check the upward and downward directions and that the TG roller to be attached to the TG7 side is exclusively for the TG7 side. Then attach the TG rollers to the chassis shaft.



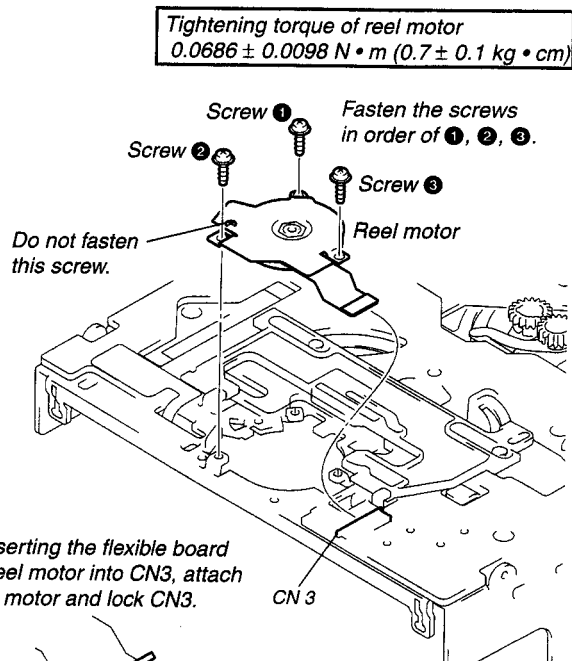
2-3-3. CAPSTAN COVER

Disassembly/Assembly



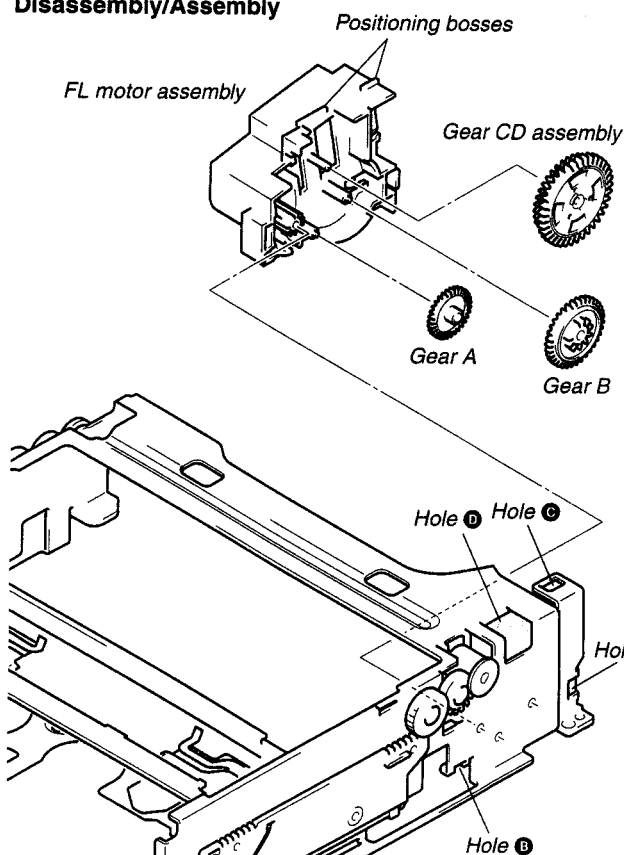
2-3-4. REEL MOTOR

Disassembly/Assembly



2-3-5. FL MOTOR ASSEMBLY, GEAR A, GEAR B AND GEAR CD ASSEMBLY

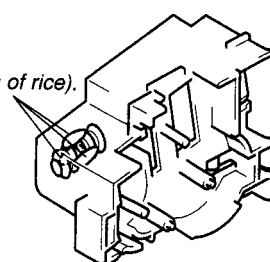
Disassembly/Assembly



Remove the claws of the FL motor assembly from hole ① and hole ② and remove the FL motor assembly. Then, remove each gear, etc. To attach them, after attaching the gears, etc. to the FL motor assembly and hook the positioning bosses of the FL motor block on holes ③ and ④ then fit the two claws in each hole ① and ②.

The worm gears are attached inside the FL motor assembly. When attaching the FL motor assembly, apply grease there.

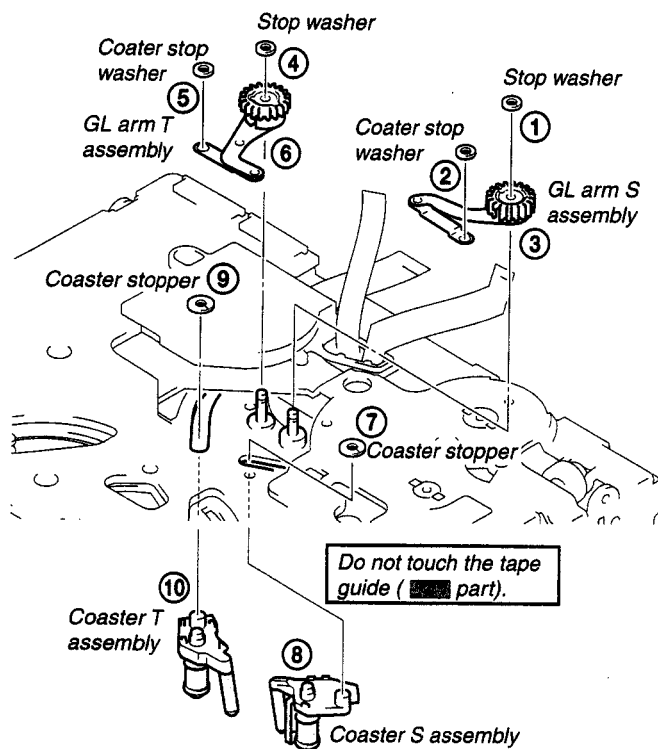
Apply grease
 (half size of one grain of rice).



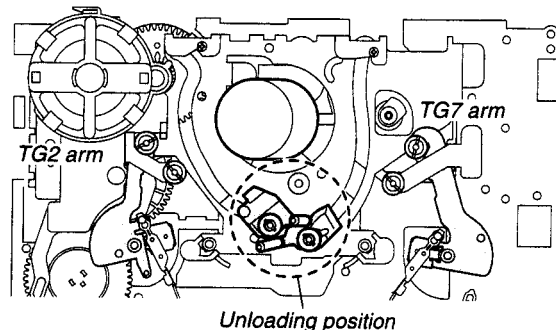
2-3-6. GL ARM S ASSEMBLY, GL ARM T ASSEMBLY, COASTER S ASSEMBLY AND COASTER T ASSEMBLY

Disassembly: Remove the parts in order of ①→②→③→④→⑤→⑥→⑦→⑧→⑨→⑩

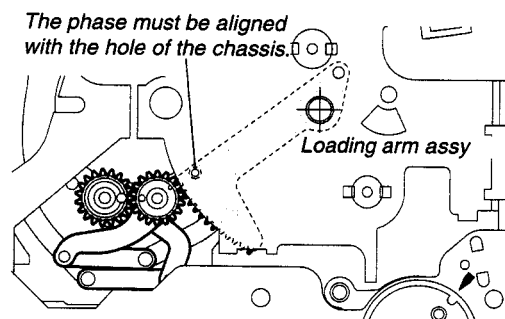
For the disassembling and assembling procedures of the GL gear, GL helical torsion spring, etc., refer to page 5-50.



Move the TG2/7 arms to the loading position with the regulated power supply or by hand while referring to page 5-35. Each coaster assembly must be in the unloading position.

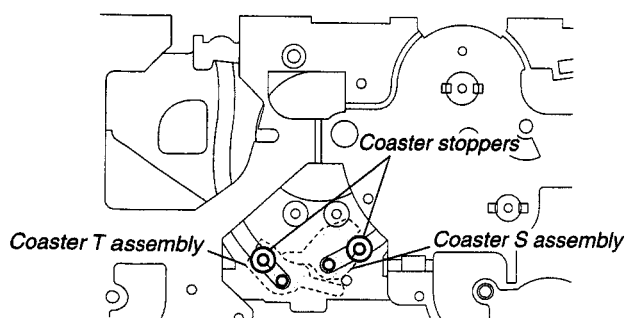


With consideration for future assembly, check from the rear of the chassis that the phase of the loading arm assy is aligned.

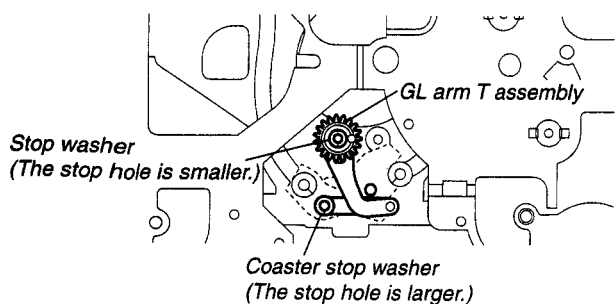


Assembly

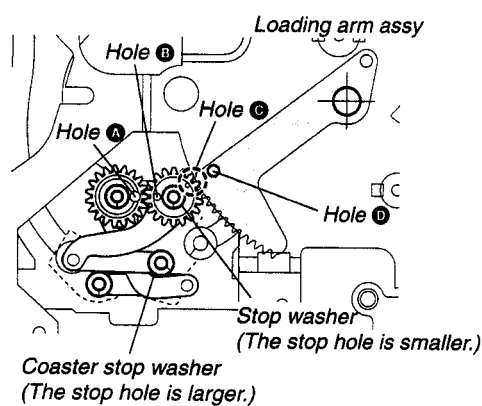
- ① Attach the coaster S/T assembly to the chassis with a new coaster stopper while being careful not to touch the tape guide. Do the work while holding the drum side of each coaster.



- ② Attach the GL arm T assembly. Fix the stop washers in the correct position, using new stop washers.



- ③ Attach the GL arm S assembly while checking the phase of each part. Fix the stop washers at the correct position, using new stop washers.



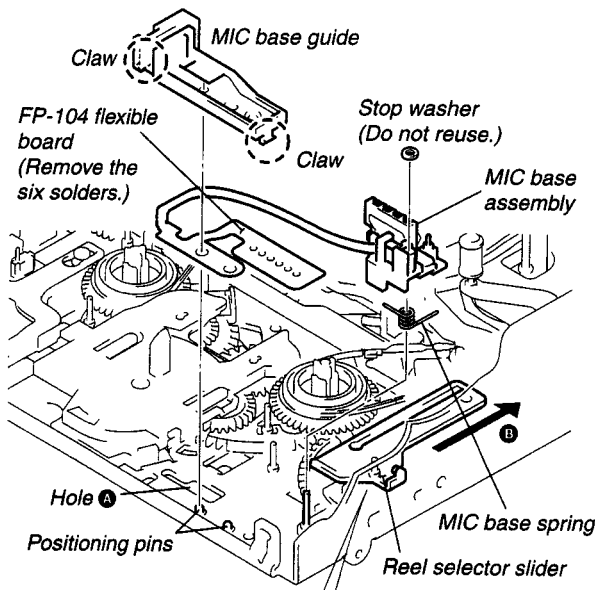
Check each phase adjustment while referring to the above figure.

Hole A of the GL gear T and hole B of the GL gear S must face each other. Hole D of the loading arm assy must be aligned with the hole of the chassis, and the endmost gear tooth of the loading arm assy must face toward hole C of the GL gear S.

2-3-7. MIC BASE GUIDE, MIC BASE ASSEMBLY AND MIC BASE SPRING

Disassembly/Assembly

For the disassembling and assembling procedures of the components of the MIC base assembly, refer to page 5-50.



When selecting a cassette position, be careful not to touch the slider drive shaft because it can be easily bent or broken.

Do not touch the slider drive shaft.
Reel select slider

Select the desired cassette position by pressing the claw position.

Remove the six solders on the FP-104 flexible board from the rear of the chassis. Pass the flexible board through hole A and pull it out of the front side of the chassis while being careful not to damage it. To attach the flexible board, perform the steps of disassembly in reverse order.

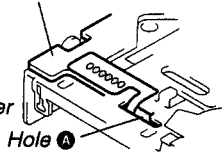
Six solders

Temperature of tip

of soldering iron : $350 \pm 20^\circ\text{C}$

Hold time : one second or shorter

MD-76 board



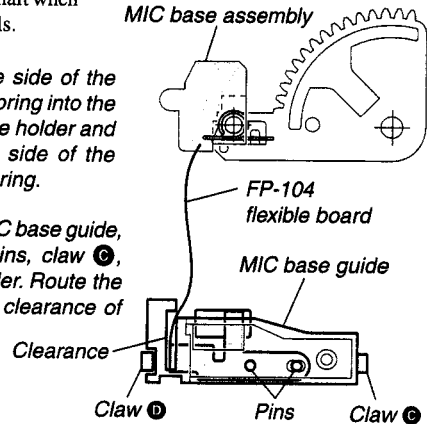
Move the reel selector slider in the direction of arrow B and attach the MIC base assembly at the position of "S cassette". For the assembly of the MIC base spring, refer to the figure.

Note: Do not hold the shaft when selecting the reels.

Insert the side of the shorter spring into the hole of the holder and hook the side of the longer spring.

When attaching the MIC base guide, lock the positioning pins, claw C, and claw D in this order. Route the flexible board into the clearance of the MIC base guide.

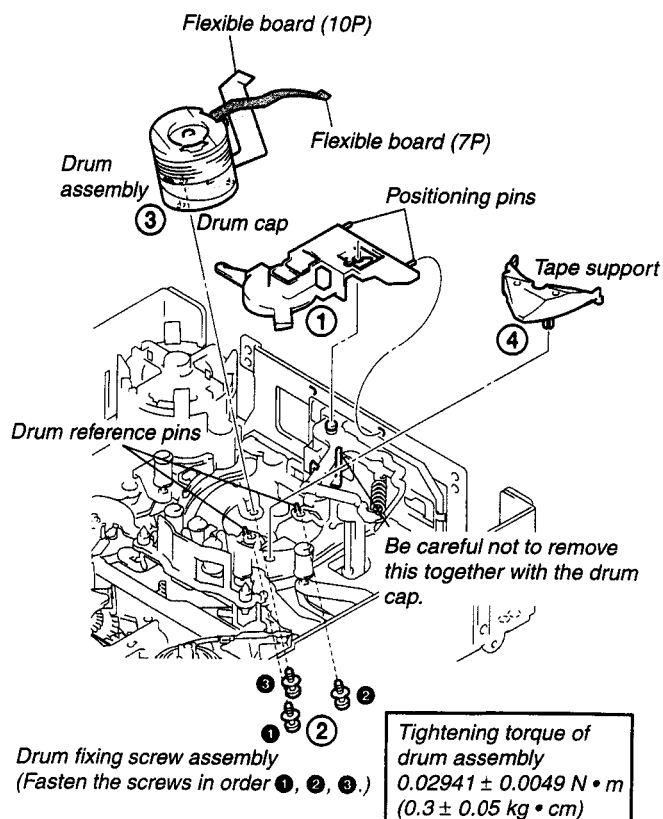
MIC base assembly



2-3-8. DRUM CAP, DRUM ASSEMBLY AND TAPE SUPPORT

Disassembly: Remove them in order of ①→②→③

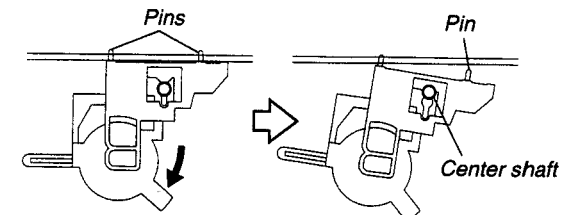
For the disassembly and assembly procedures of the components of the drum assembly, refer to page 5-51.



Assembly: Attach the parts while referring to the disassembly procedure and the figure below.

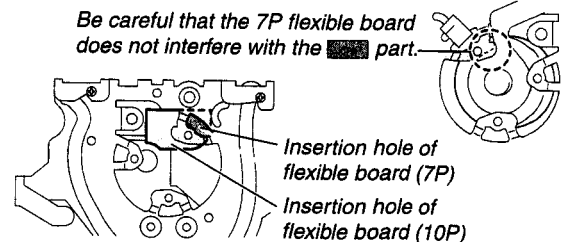
(After assembling, adjust the tape path while referring to page 5-52 and thereafter.)

Assembly and disassembly of the drum assembly
When pulling the [part] in the direction of the arrow, the claw is removed from the center shaft, then the right pin and the drum cap are removed as shown in the figure on the right. To attach the drum assembly, perform the disassembly steps in reverse order.

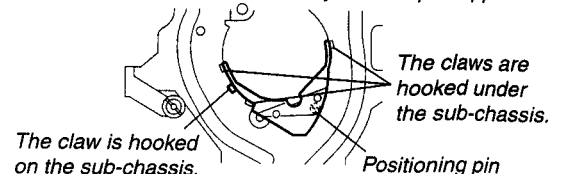


Assembly and disassembly of the drum assembly

Be careful that the 7P flexible board does not interfere with the [part].



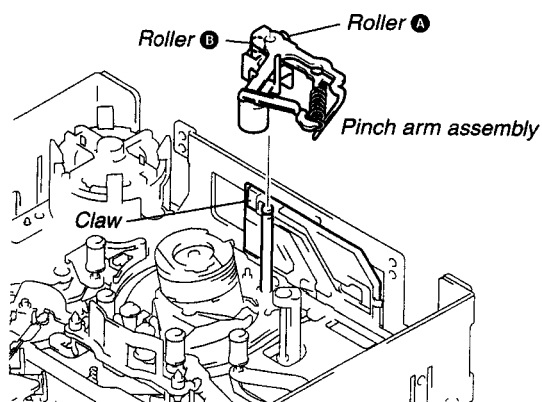
Assembly and disassembly of the tape support



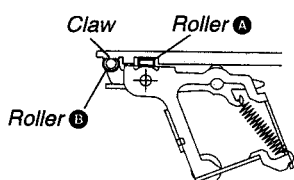
2-3-9. PINCH ARM ASSEMBLY

Disassembly/Assembly

For the disassembling and assembling procedures of the tape retainer and compression coil spring (tape retainer), refer to page 5-51.



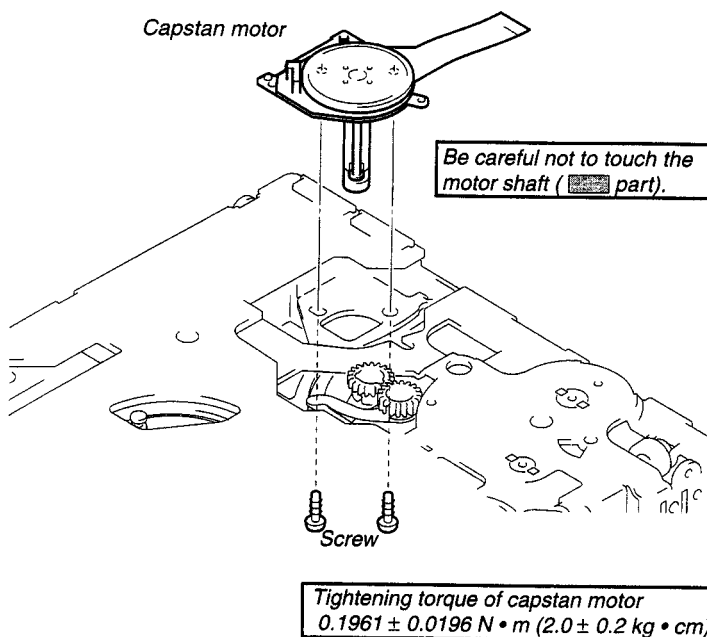
Push roller A into the groove as shown in the figure. Insert roller B into the claw. To remove the pinch arm assembly, pull out the pinch arm upward while pushing the claw.



2-3-10. CAPSTAN MOTOR

Disassembly/Assembly

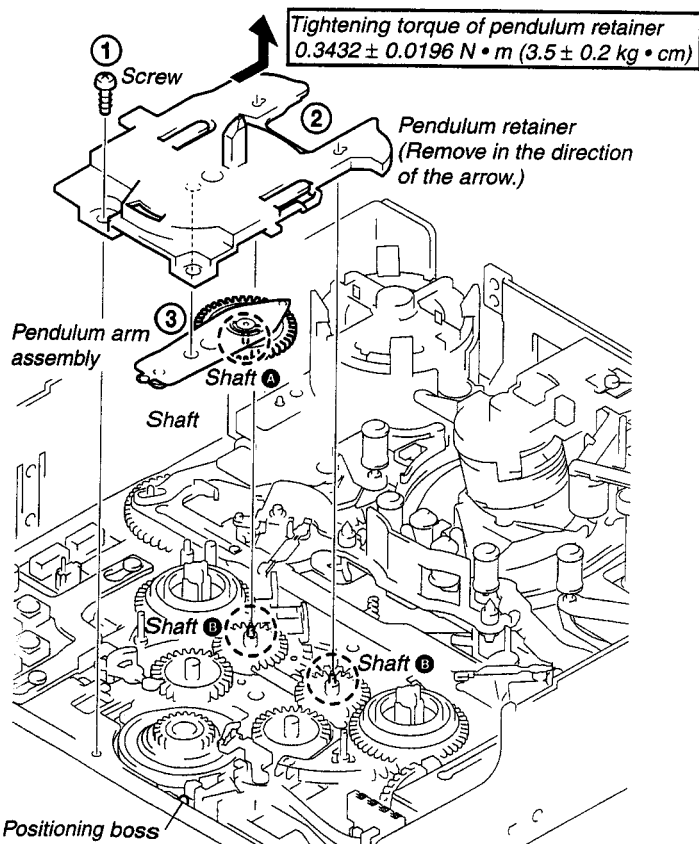
(After assembling, adjust the tape path from page 5-52.)



2-3-11. PENDULUM RETAINER AND PENDULUM ARM ASSEMBLY

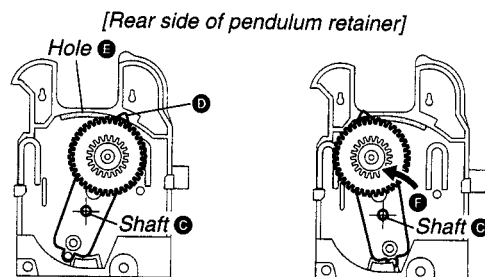
Disassembly: Remove them in order of ①→②→③

(To attach them, perform the disassembly steps in reverse order.)



Notes during assembly

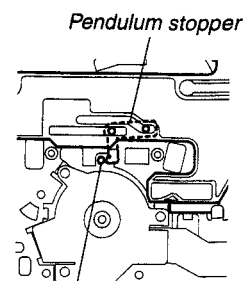
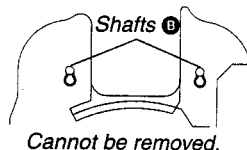
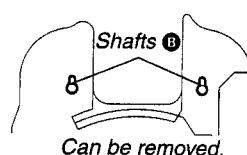
When assembling or disassembling the pendulum arm assembly, be careful of the following.



Insert tip D of the pendulum arm into hole B of the pendulum retainer and insert the pendulum into shaft C.

Slide the pendulum arm in the direction of arrow E and attach it to the chassis.

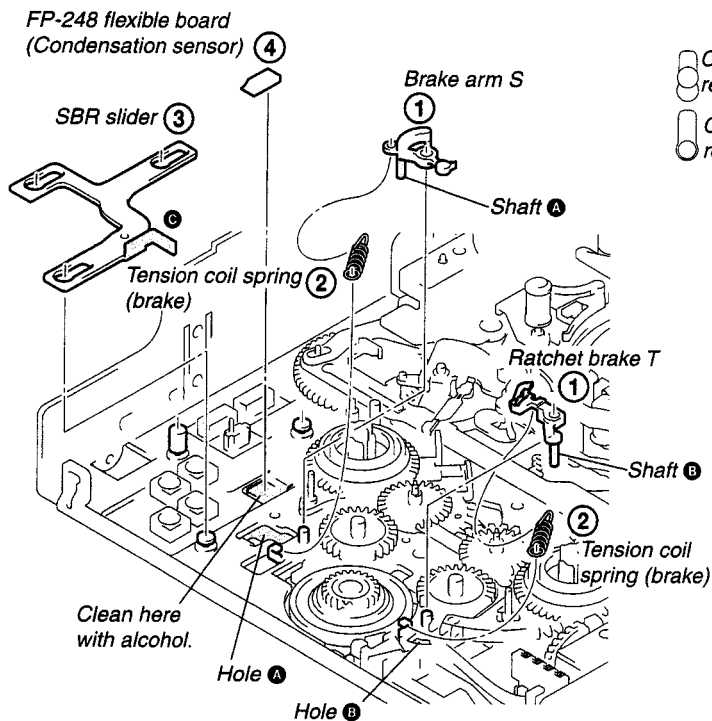
Attach the pendulum retainer to shaft B. Be careful of the positions of the pendulum stopper at the rear of the chassis and shaft A of the pendulum arm.



Shaft A of the pendulum must be in this position.

2-3-12. BRAKE ARM S, RATCHET BRAKE T, TENSION COIL SPRING (BRAKE), SBR SLIDER AND FP-248 FLEXIBLE BOARD (CONDENSATION SENSOR)

Disassembly: Remove them in order of ①→②→③→④
(To attach them, perform the disassembly steps in reverse order.)



Remove the SBR slider while being careful not to touch the adjuster.

Portion ③ of the SBR slider and brake arm S must run close to each other.

The idler gear A assembly must be engaged with the gear teeth.

Cannot be removed.
Can be removed.

Insert shaft A into hole A.

Insert shaft B into hole B.

Hook the hook of the spring on the brake side from underneath.

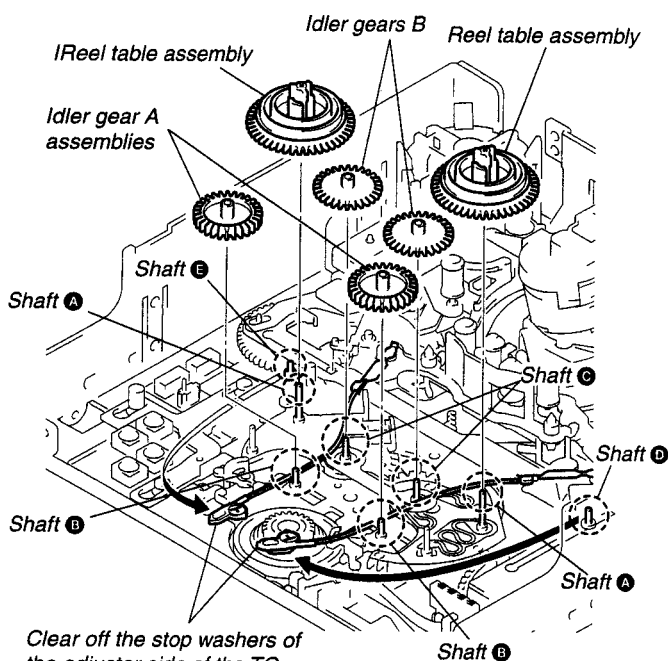
When attaching the FP-248 flexible board, scrape the contact surface with a swab to stick the flexible board to the chassis. Do not touch the sensor block (black area).

Two solders
○ Temperature of tip of soldering iron: $350 \pm 20^\circ\text{C}$
Hold time: one second or shorter

2-3-13. REEL TABLE ASSEMBLY, IDLER GEAR A ASSEMBLY AND IDLER GEAR B

Disassembly/Assembly
(Do not touch the TG band block.)

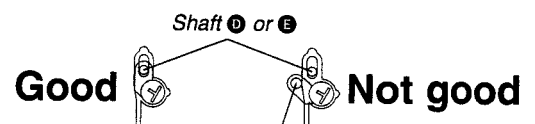
When the reel table assembly is replaced or attached, perform each adjustment from Adjustment Start -1 of the flowchart on page 5-52.



Clear off the stop washers of the adjuster side of the TG band in advance as shown in the figure.

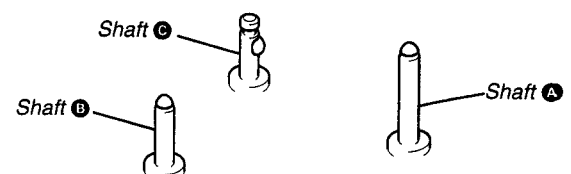
Checks before work

The TG band winds around the slit of the reel table assembly. Before removing the reel table assembly, clear off the TG band while referring to the left figure. When attaching the TG band, be sure to use new stop washers.

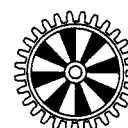


When attaching the TG band, the part also must be inserted into shaft D or E.

When attaching each gear, apply grease to each fixing shaft. Apply grease of half the size of one rice grain to the top side of shaft C. When attaching the idler gear A assembly, be careful not to apply grease to the reflection panel.



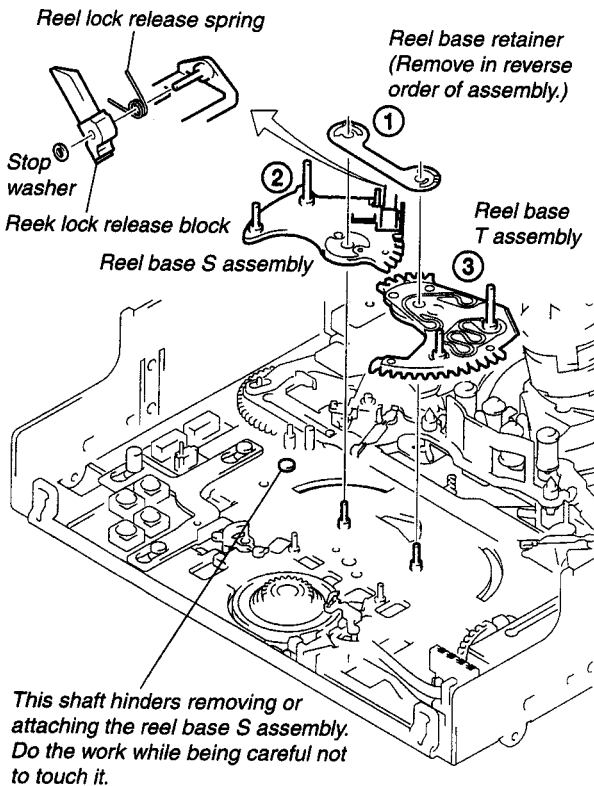
Apply grease to [] part. (half size of one grain of rice)



When attaching the idler gear A assembly, be careful not to apply grease to the reflection panel.

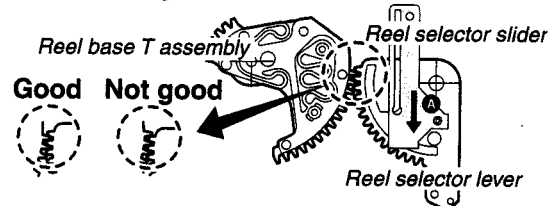
2-3-14. REEL BASE RETAINER, REEL BASE T ASSEMBLY AND REEL BASE S ASSEMBLY (REEL LOCK RELEASE BLOCK AND REEL LOCK RELEASE SPRING)

Disassembly: Remove them in order of ①→②→③
(Refer to Assembly, too.)

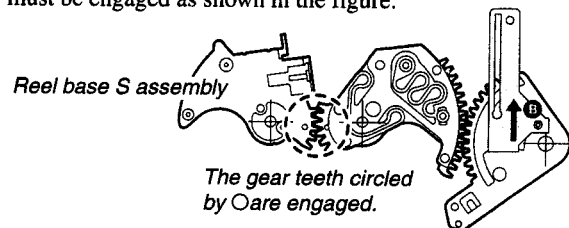


Assembly: Attach them in order of ①→②→③

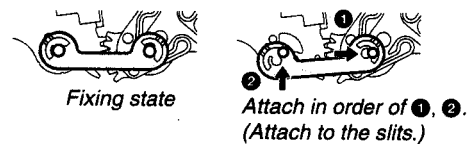
- ① Move the reel selector slider in the direction of arrow **A** to check that the reel selector lever is "L cassette". At this position, attach the reel base T assembly. The gear teeth must be engaged as shown in the figure.



- ② Move the reel selector slider in the direction of arrow **B** and switch the reel selector lever to "S cassette". At this position, attach the reel base S assembly. The gear teeth (circled by ○) must be engaged as shown in the figure.



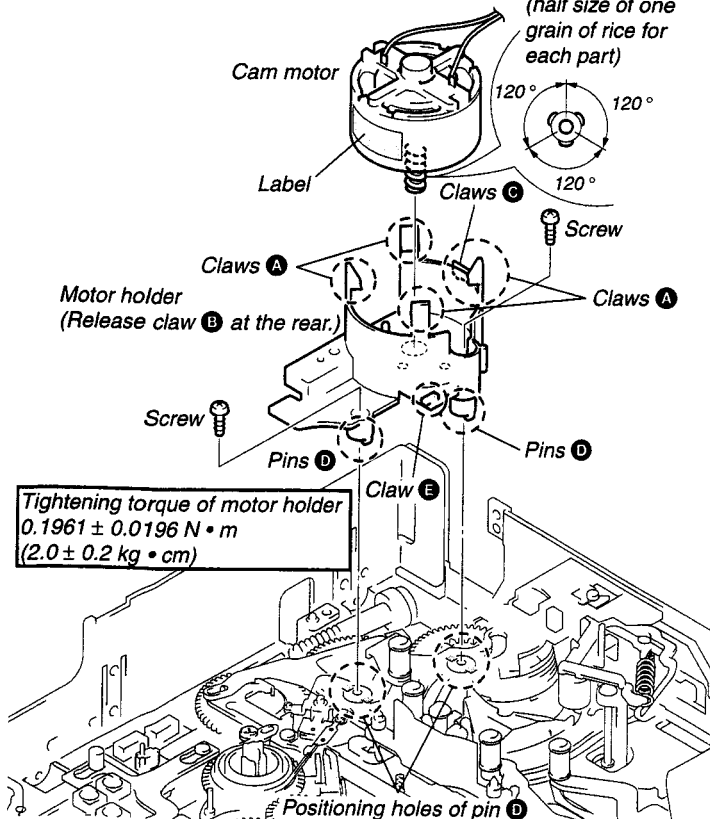
- ③ Attach the reel base retainer.



2-3-15. CAM MOTOR, MOTOR HOLDER

Disassembly/Assembly

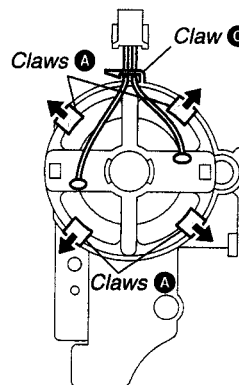
Apply grease to the three parts and tip.
(half size of one grain of rice for each part)



Note: Do not hold the shaft when selecting the reels.

Checks before disassembly and assembly

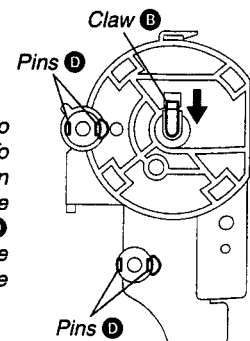
The cam motor is fixed on the motor holder by the four claws. Releasing the four claws enables the cam motor to be removed without removing the motor holder from the chassis. When attaching the cam motor, be careful of the assembling direction (the label must face toward the front). If the phase of the gear, etc. moves when removing the motor holder, refer to page 5-40.



[Front side of motor holder]
While spreading claws **A** in the direction of the arrow, pull out the cam motor upward. To attach it, push the cam motor into the motor holder and route the two wires of the cam motor into claw **C**.

When attaching the TG2 control arm, claw **E** must be inserted into the hole of the TG2 control arm.

[Rear side of motor holder]
The motor holder is fixed by the two screws and claw **B** at the rear. To remove it, push claw **B** in the direction of the arrow from the rear of the chassis. Note that positioning pins **D** are easy to break when attaching the motor holder. Apply grease (half size of one grain of rice) to the two parts shown in the right figure.



2-3-16. TG2/7 ARM BLOCK, TG2/7 BAND BLOCK AND TENSION COIL SPRING (TG2)/(TG7)

Disassembly: Remove them in order of ①→②→③→④

For the disassembling and assembling procedures of the assembly components of the TG2/TG7 arm, refer to page 5-51.

Be careful not to touch
the tape guide (□ part) and TG band block

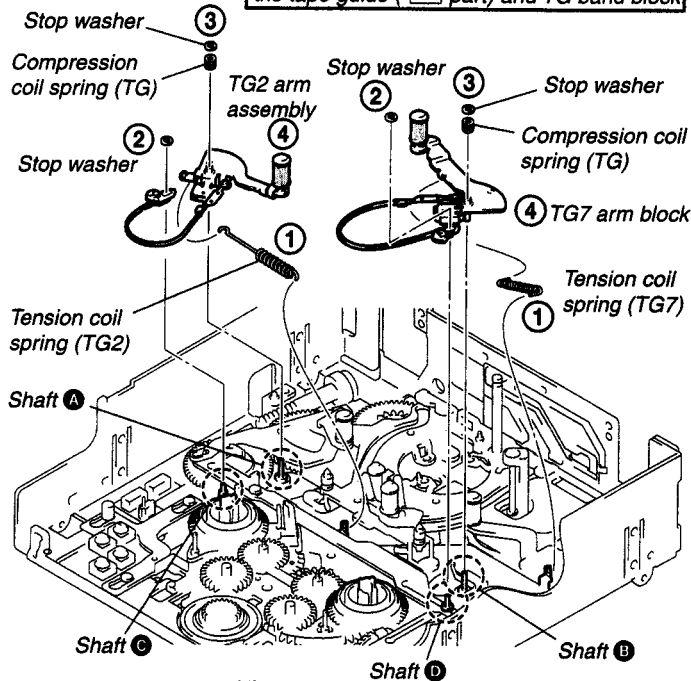


Fig. 1

Assembly: Attach them while referring to figure above or below and the descriptions.

When these parts are replaced or attached, perform each adjustment from Adjustment Start -3 of the flowchart on page 5-52.

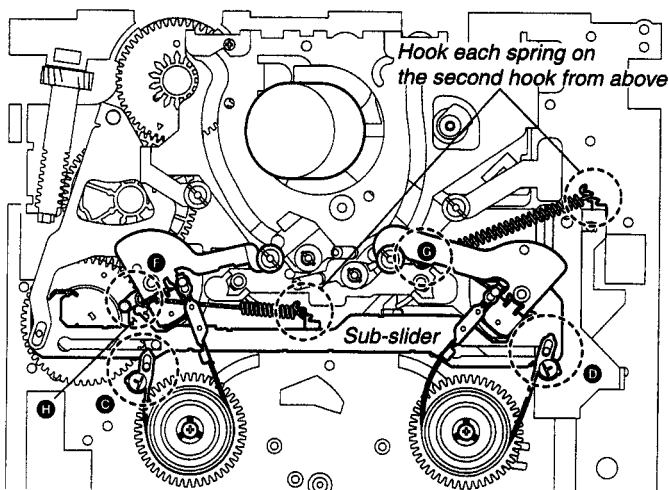


Fig. 3

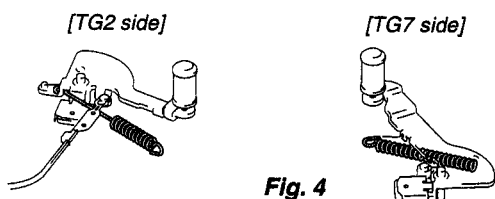


Fig. 4

Hook the spring from the inside and put it under the TG band.

Hook the spring from the outside and put it under the arm.

Notes during work

Be careful when handling the TG arm and the peripheral parts.

- Twisting and bending of the band block and tension coil spring
- Dirt and scratches of the tape guide
- Loss of the compression coil spring (TG)

Do not reuse removed stop washers.

Disassembly of the band TG2/TG7 assembly

When pulling portion ⑤ of the TG2 or TG7 band in the direction of the arrow, a click sound is heard as the band is removed. To attach the bands, pull out the opposite side to portion ⑤ to lock.

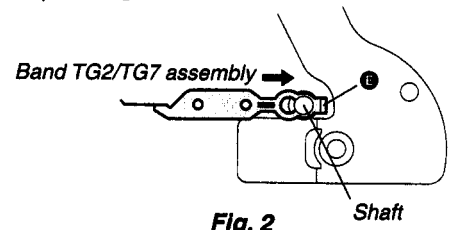
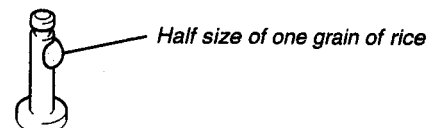
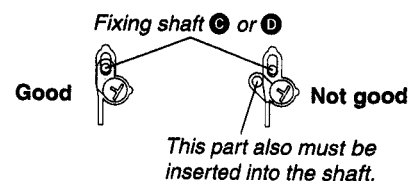


Fig. 2

- ① Apply grease to the top side of the fixing shaft (A or B) of the TG arm. (Fig. 1)



- ② Attach the TG band assembly to the TG arm assembly. (Fig. 2) Be sure that the felt sides of the TG band face toward the reel tables so that they surround the respective reel tables.
- ③ Attach the tension coil spring to the TG arm assembly. (Fig. 3, 4)
 - Hook the spring of the tension coil spring (TG2) from the inside and put it under the TG band. (Fig. 3-F, 4)
 - Hook the spring of the tension coil spring (TG7) from the outside and put it under the TG7 band. (Fig. 3-G, 4)
- ④ Attach the TG arm block to the shaft (A or B) and attach the tension coil spring to the second hook. When attaching the TG2 arm, the □ part must be at the left of portion H of the slider. (Fig. 3)
- ⑤ Attach the adjuster of the TG band to shafts C and D.



- ⑥ Fix the TG band and TG arm with new stop washers. When attaching the TG arm, do not forget to attach the compression coil spring (TG). (Fig. 1)

2-3-17. SUB-SLIDER ARM, SUB-SLIDER, ENCODER GEAR, MAIN CAM GEAR, COUPLING GEAR, SUB-CAM GEAR, PINCH SLIDER AND LOADING ARM ASSY

Disassembly: Remove them in order of ①→②→③→④→⑤→⑥→⑦→⑧

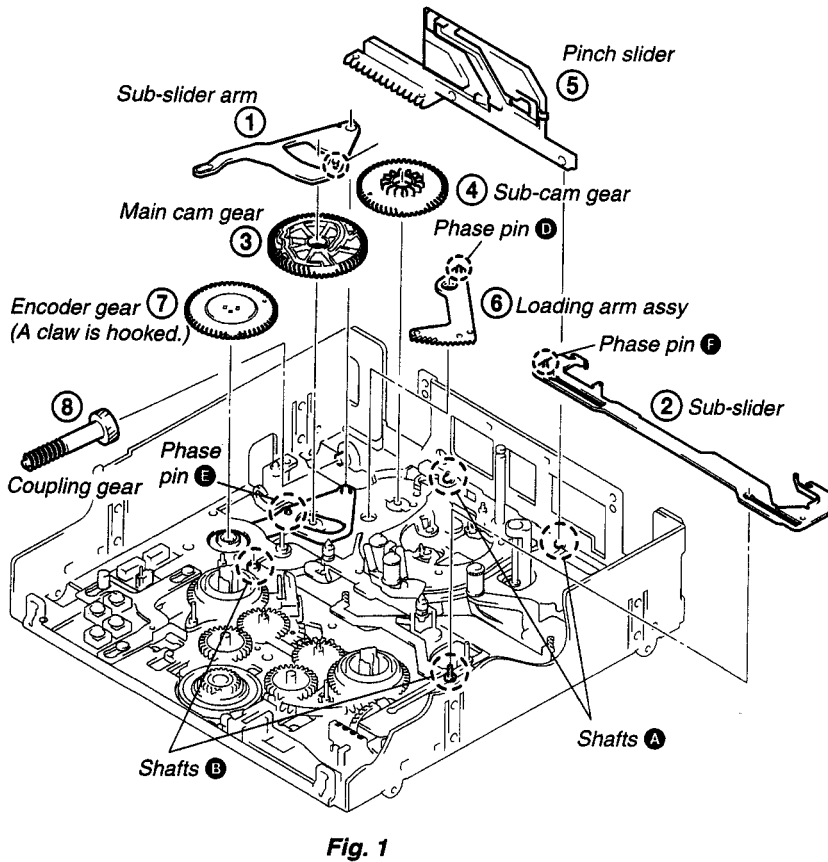


Fig. 1

Disassembly of the pinch slider

Move the pinch slider to the leftmost end, and slide it upward and remove it when two shafts A are superimposed on the holes of the pinch slider.

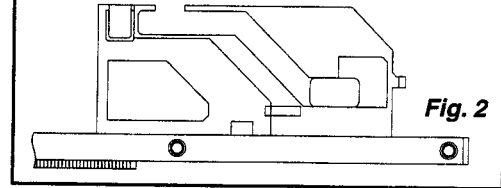


Fig. 2

Disassembly of the sub-slider

Move the sub-slider to the rightmost and remove it from two shafts B.

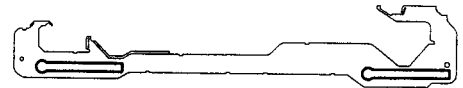


Fig. 3

This can be removed.
This cannot be removed.

Disassembly of the encoder gear

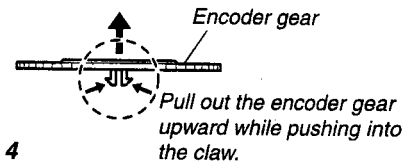


Fig. 4

Assembly: Attach them while referring to the figure above or below and the descriptions.

Check before work

When attaching the parts described in this section, various phase adjustments are required. Before work, refer to page 5-48 and check the reference phases.

[Rear side of chassis]

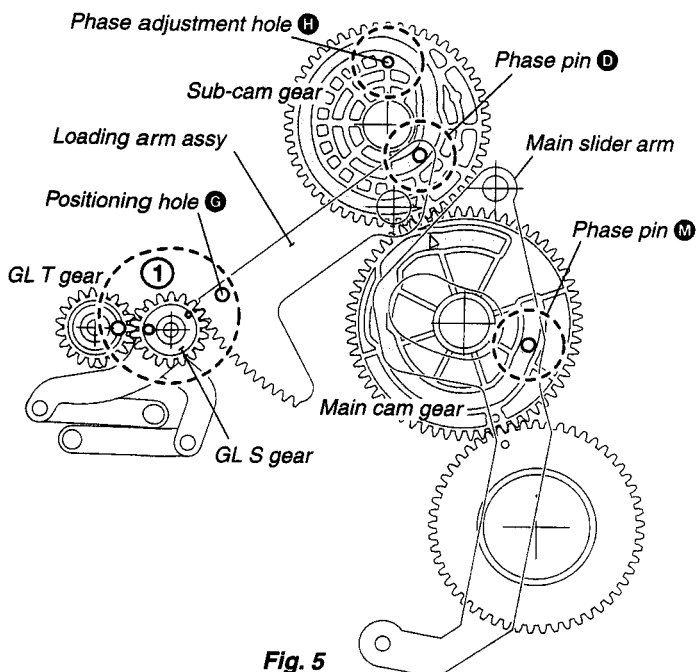


Fig. 5

- ① Attach the loading arm assy. (Refer to the figure above.)
The phases of the GLS gear and GLT gear must match and the positioning hole G of the loading arm assy must be superimposed on the hole of the chassis. (Fig. 5)
- ② Attach the pinch slider. (Fig. 1, 2)
- ③ Apply grease to the groove at the rear of the sub-cam gear. (Fig. 6)
After applying, adjust the phase of the sub-cam gear to that of the pinch slider. (Fig. 7)
Phase pin D of the loading arm assy must be inserted into the groove at the rear of the sub-cam gear. (Fig. 5, 7)

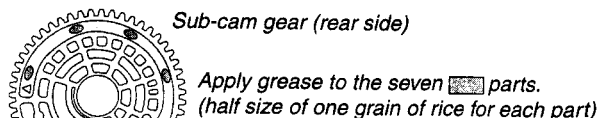


Fig. 6

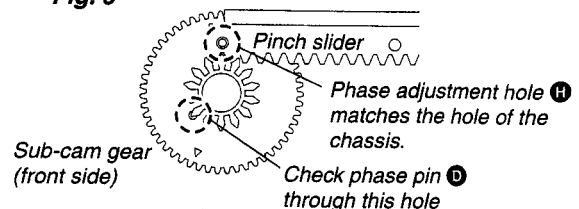


Fig. 7

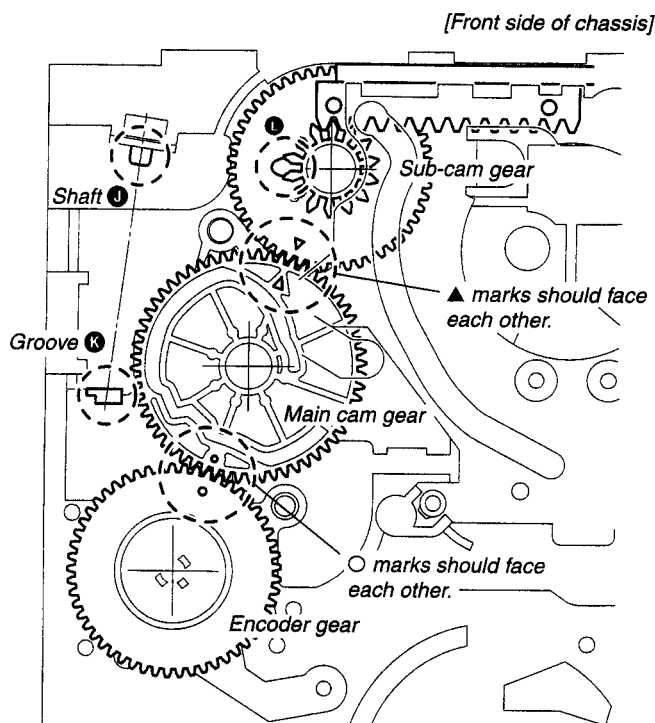


Fig. 8

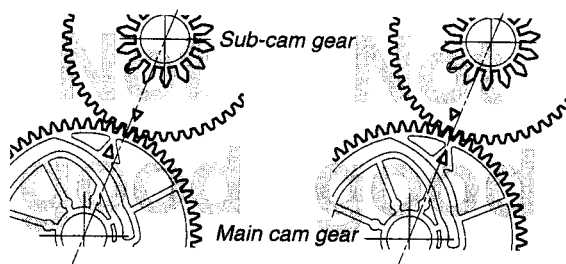


Fig. 11

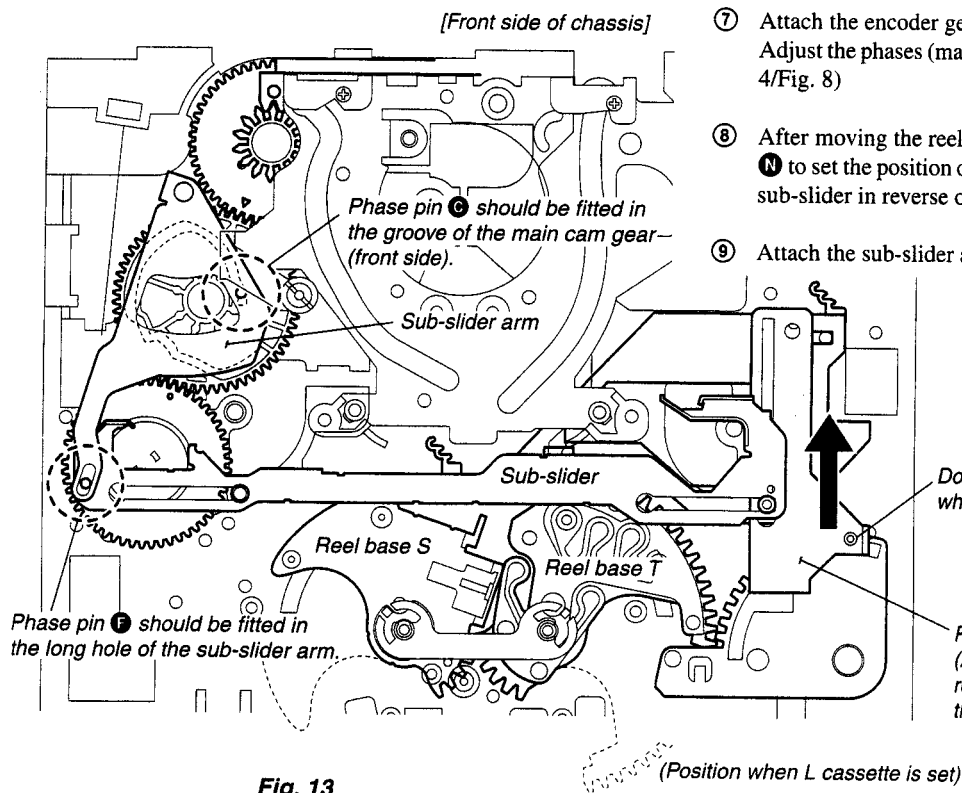


Fig. 13

- ④ Apply grease to the fixing block (shaft J and U-shaped groove K) of the coupling gear and portion L of the sub-cam gear (half size of one grain of rice for each part). (Fig. 8)

- ⑤ Attach the coupling gear. After attaching, apply grease while rotating the coupling gear by 120° each time. (Fig. 9, 10)

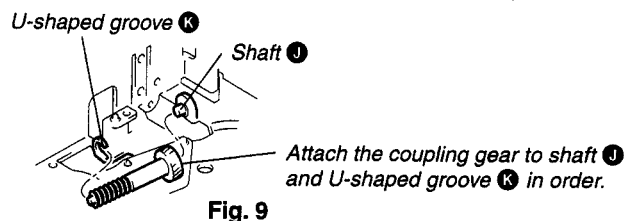


Fig. 9

Apply grease to the three [] parts (half size of one grain of rice for each part).

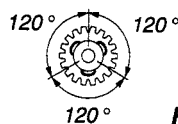


Fig. 10

- ⑥ Attach the main cam gear while being careful of the directions of the front and rear sides. Also, take care of the phase adjustment to the sub-cam gear. (Fig. 8, 11, 12)
Phase pin M of the main slider arm should be fitted in the groove of the main cam gear (rear side). (Fig. 5)

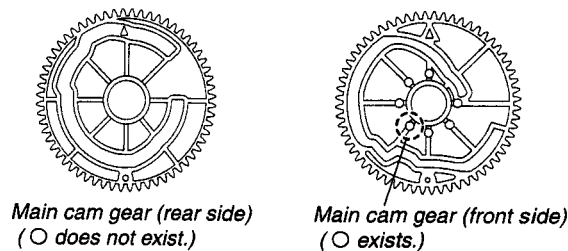


Fig. 12

- ⑦ Attach the encoder gear. (Fig. 3)
Adjust the phases (marked) to those of the main cam gear. (Fig. 4/Fig. 8)

- ⑧ After moving the reel selector slider in the direction of arrow N to set the position of the reel base to "L cassette", attach the sub-slider in reverse order while referring to Fig. 3. (Fig. 13)

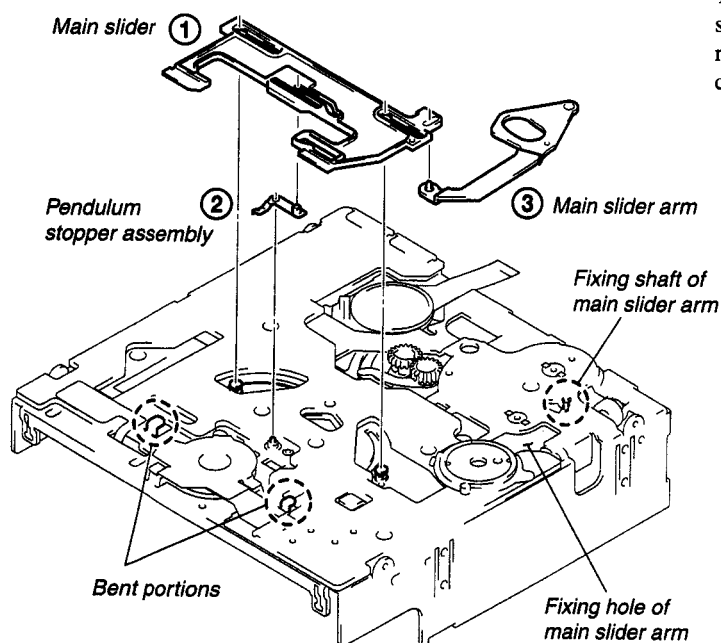
- ⑨ Attach the sub-slider arm. (Fig. 1/Fig. 13)

Do not hold the shaft when selecting the reels.

Reel selector slider
(After attaching the sub-slider arm, return the reel base to the original position (L cassette).)

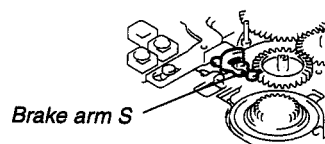
2-3-18. MAIN SLIDER, MAIN SLIDER ARM AND PENDULUM STOPPER ASSEMBLY

Disassembly: Remove them in order of ①→②→③



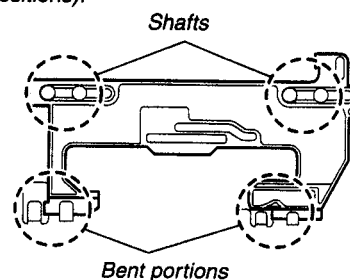
Disassembly of each part

The main slider controls several parts. Before removing the main slider, remove "Brake arm S" at the front of the chassis while referring to "Information" on page 5-34. Otherwise, the main slider cannot be removed.



Main slider

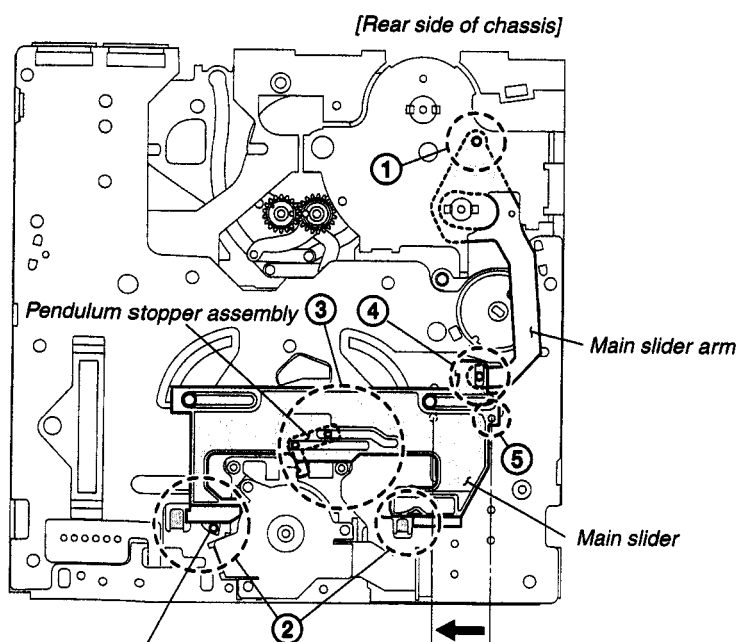
The main slider is fixed by the two shafts and the two bent portions at the rear of the chassis. The main slider can be removed when it is moved to the rightmost end (■ positions).



Assembly: Attach them while referring to the figure above or below and the descriptions.

Assembly of each part

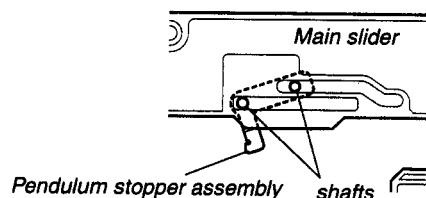
Attach each part while referring to the figure above or below. When attaching the parts, adjust the positions carefully while referring to the instructions in the figure below. Because these positioning will be used as a reference when assembling in future, make sure to adjust the positions and phases correctly.



The shaft of the ratchet brake T should be at the position where it can be viewed from the outside as shown in the figure.

Move the main slider so that the positioning holes are superimposed.

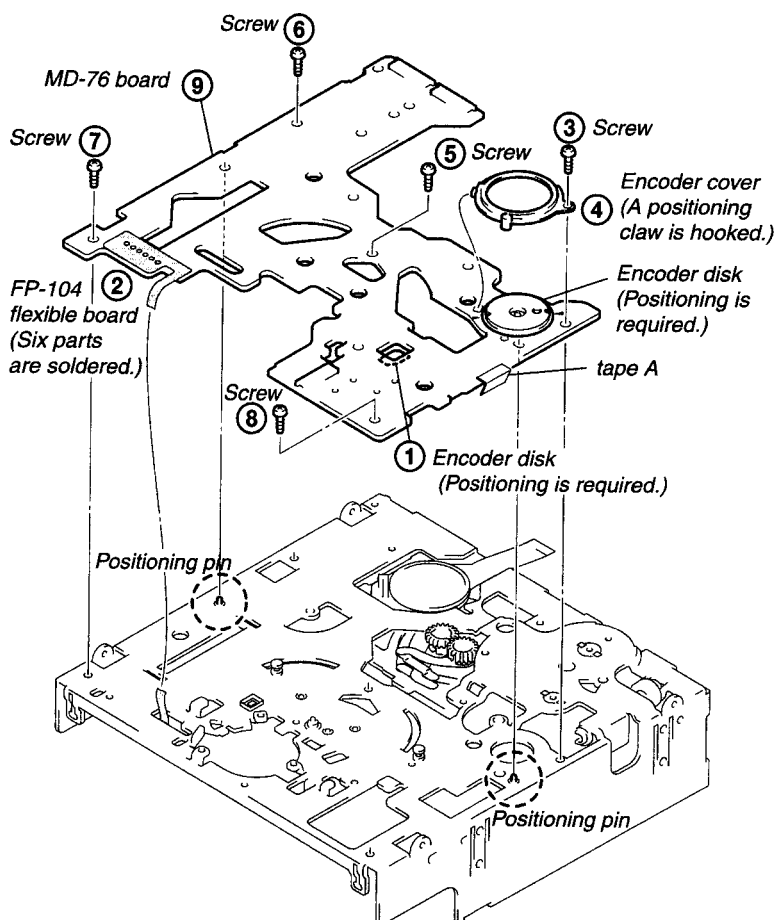
- ① Insert the main slider arm into the fixing hole and attach it to the fixing shaft at the front of the chassis while referring to the figure above. (To facilitate assembly, stick adhesive tape so that the main slider arm does not drop.)
- ② Perform assembly so that the main slider can pass under the bent portion of the chassis. If "Ratchet brake T" remains, move down the "Ratchet brake T" as shown in the left figure and attach the main slider.
- ③ Carefully attach the pendulum stopper assembly so that the two shafts fit in the two long holes of the main slider.



- ④ Attach the shaft of the main slider arm to the long hole of the main slider.
- ⑤ Move the main slider to the leftmost end so that the small positioning hole of the main slider is superimposed on the small positioning hole of the chassis, and fix the main slider. The position where the main slider is fixed will be used as a reference during assembling and phase adjustment in future. (To avoid affecting the main unit, fix the reel motor and main slider with adhesive tape, etc.)

2-3-19. MD-76 BOARD AND ENCODER RETAINER

Disassembly: Remove them in order of ①→②→③→④→⑤→⑥→⑦→⑧→⑨



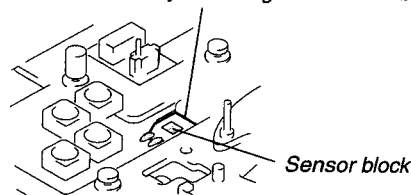
Disassembly of MD-76 board

Peel off the FP-248 flexible board at the front of the chassis (refer to page 5-43). Remove the six solders on the FP-104 flexible board from the rear of the chassis. Remove the screws in order of ③ to ⑧ shown in the figure. When removing the MD-76 board from the chassis, be careful not to let the sensors touch the chassis.

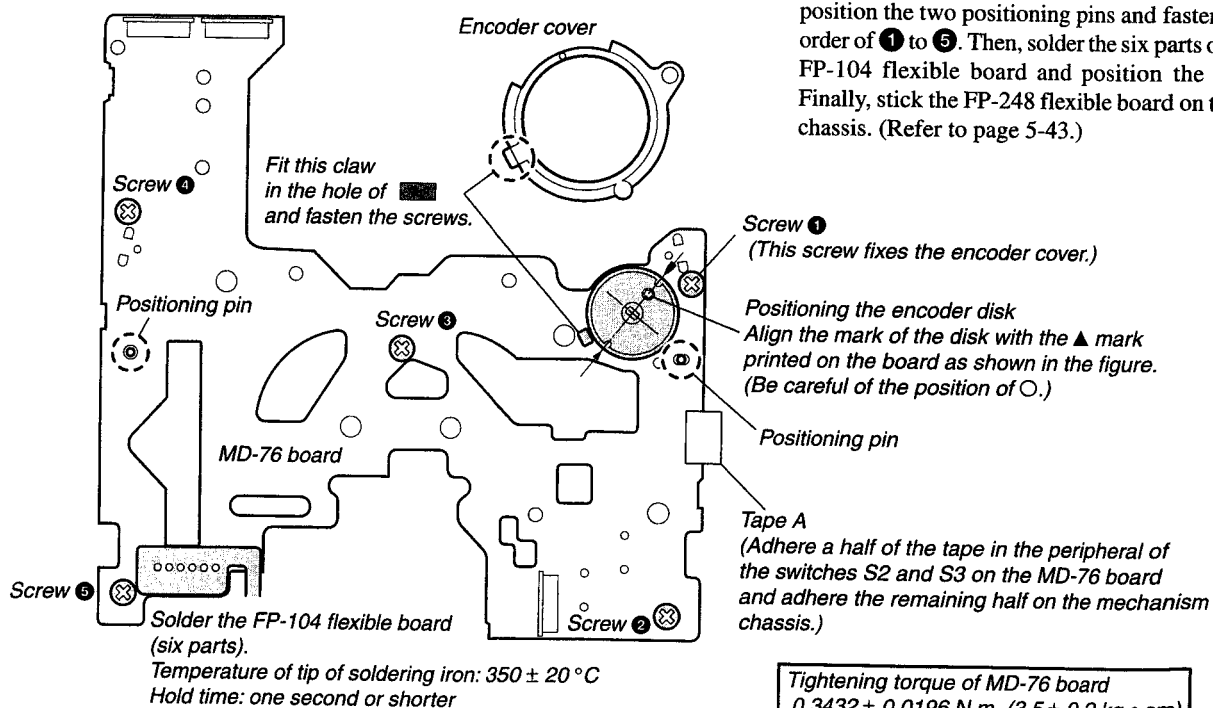
Note: When the tape A is removed, use the new tape A for replacement. (See the illustration below.)

FP-248 flexible board

Peel off the flexible board while being careful not to get the sensor block dirty or damage the sensor block.

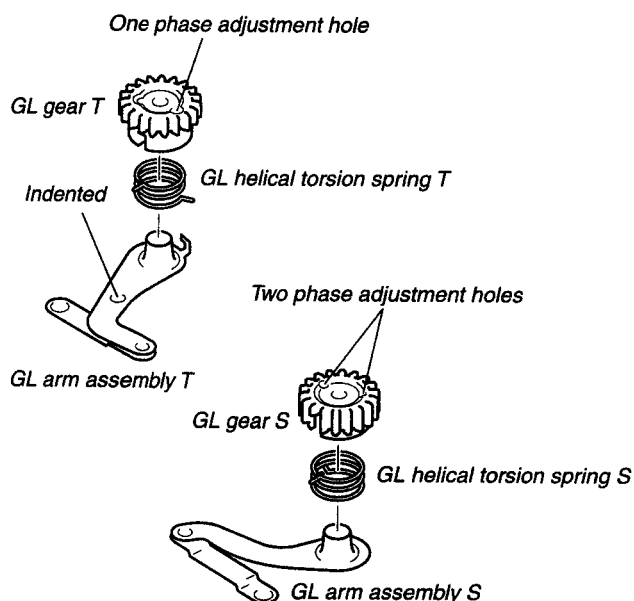


Assembly: Attach them in order of ⑨→⑧→③→④→⑤→⑥→⑦→①→②
(Refer to the figure above or below.)



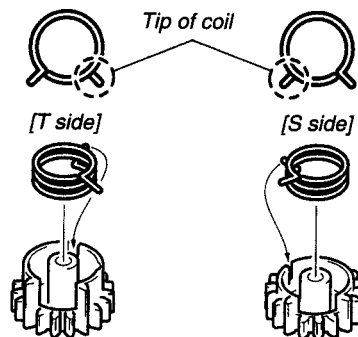
2-3-20. COMPONENTS OF GL ARM S/T ASSEMBLY (GL ARM ASSEMBLY, GL HELICAL TORSION SPRING, GL GEAR)

Disassembly and distinguishing the S side from the T side



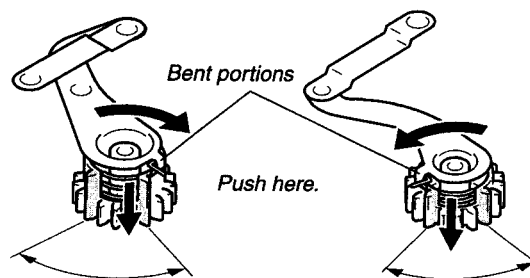
Assembly

- ① Attach each GL helical torsion spring to the GL gear. To distinguish the S side from the T side when the opening of the spring tip is facing toward the front, note that the coil tip of the S side is located on the left and that of the T side is located on the right.



Fit the tip of the spring into the small cut-out of the GL gear.

- ② Hook the tip of the spring on the bent portion of the GL arm assembly and push the bent portion of the GL arm into the large cut-out of the GL gear while rotating the GL gear in the direction of the arrow.

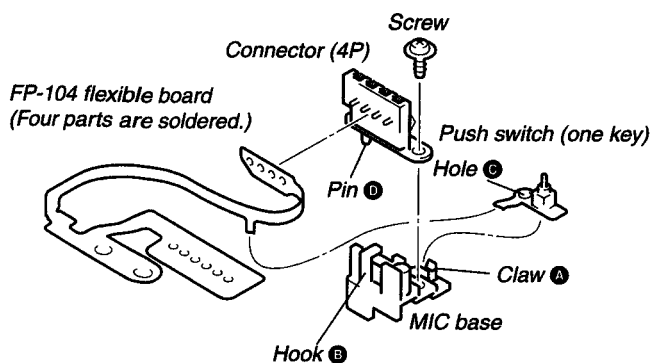


When the bent portion of the GL arm comes inside this range, push the bent portion into the gear.

2-3-21. COMPONENTS OF MIC BASE ASSEMBLY (FP-104 FLEXIBLE BOARD, MIC BASE)

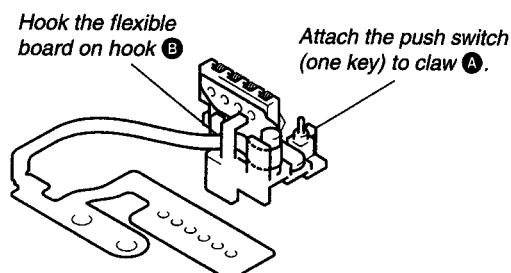
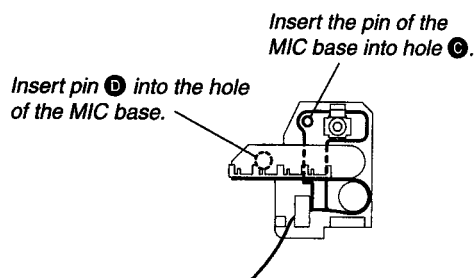
Disassembly

Remove the push switch from claw **A** of the MIC base. Remove the screw and connector (4P). Then, remove the flexible board while being careful not to touch hook **B**.



Tightening torque of connector (4P)
 $0.0392 \pm 0.0098 \text{ N} \cdot \text{m}$ ($0.4 \pm 0.1 \text{ kg} \cdot \text{cm}$)

Assembly



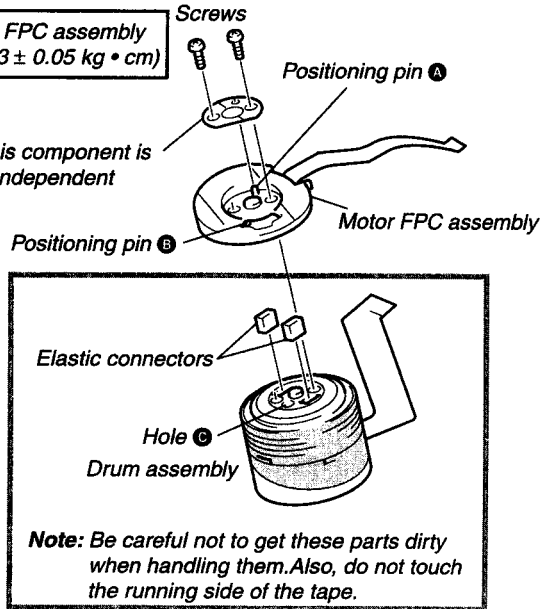
2-3-22. COMPONENTS OF DRUM ASSEMBLY (MOTOR FPC ASSEMBLY, ELASTIC CONNECTOR)

Disassembly/Assembly

Connect the elastic connector to the drum assembly and attach the motor FPC assembly while aligning pin ③ with hole ② of the drum assembly. Fix the supporter plate with the screws while being careful of pin ① of the motor FPC assembly.

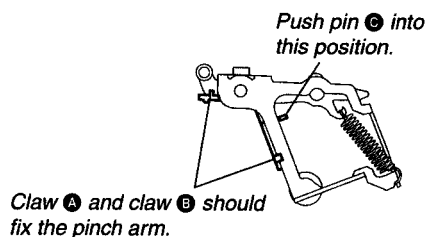
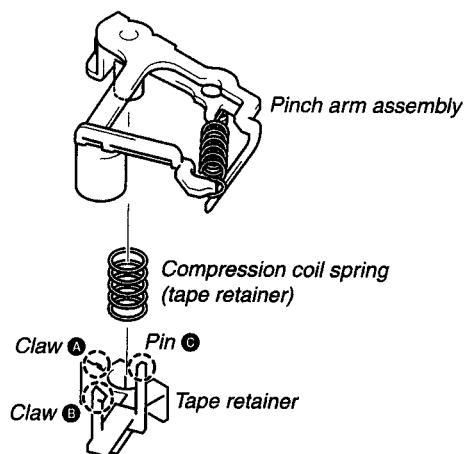
Tightening torque of motor FPC assembly
 $0.0294 \pm 0.0049 \text{ N} \cdot \text{m}$ ($0.3 \pm 0.05 \text{ kg} \cdot \text{cm}$)

Supporter plate (This component is not supplied as an independent repair part.)



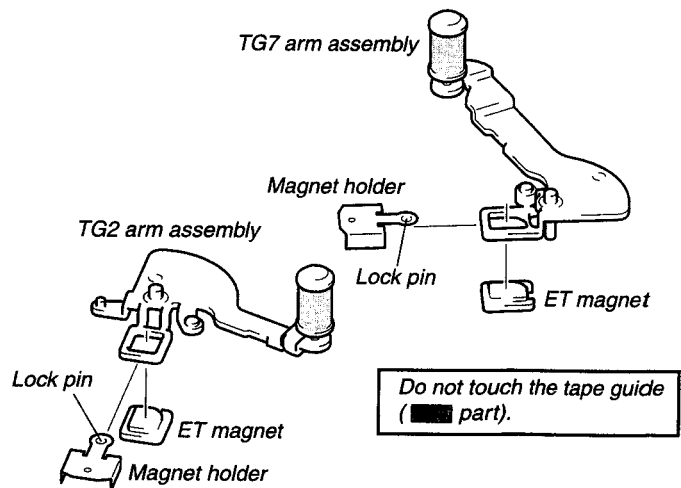
2-3-23. COMPONENTS OF PINCH ARM ASSEMBLY (TAPE RETAINER, COMPRESSION COIL SPRING)

Disassembly/Assembly

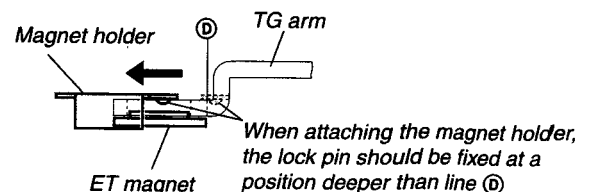


2-3-24. COMPONENTS OF TG2/7 ARM ASSEMBLY (ET MAGNET, MAGNET HOLDER)

Disassembly/Assembly



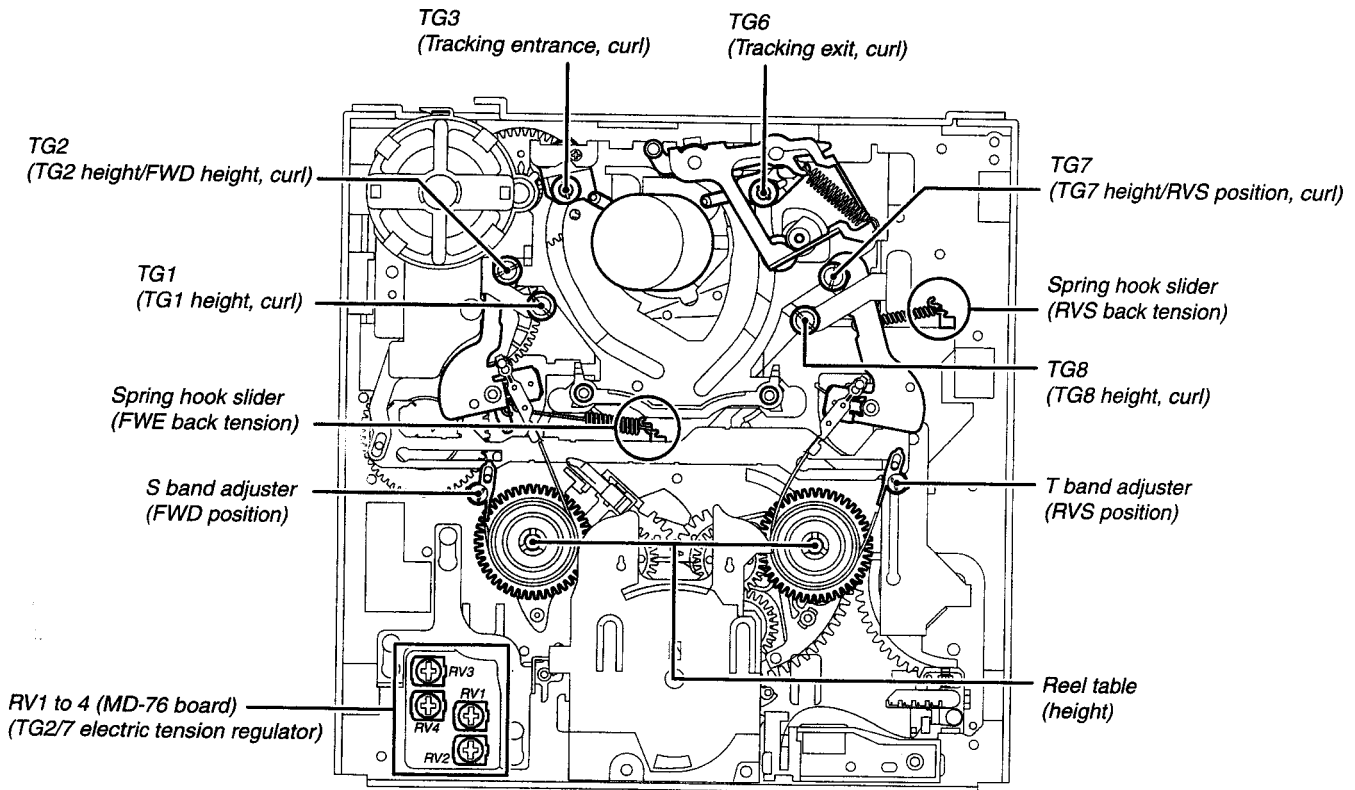
Remove the TG2 arm assembly and the TG7 arm assembly in the direction of the arrow while pushing the lock pin of the magnet holder from the rear of each TG arm. To attach them, insert the TG2 or TG7 arm assembly in the direction opposite to the arrow while holding the ET magnet with the magnet holder, then hook the lock pin.



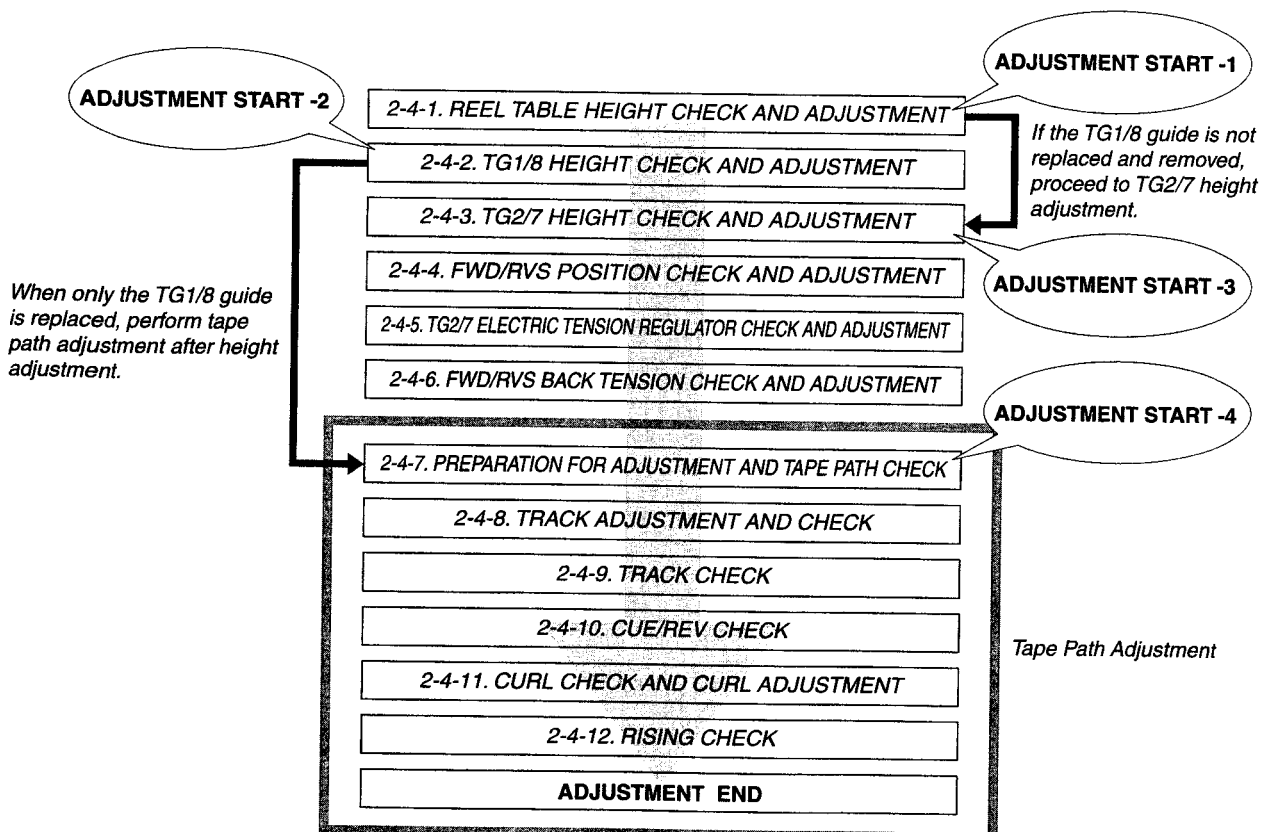
5-2-4. CHECK AND ADJUSTMENT

- When the parts of the tape path (tape guide, reel table, etc.) have been removed or parts have been replaced, adjust the following parts according to the flowchart below.

• ADJUSTMENT POSITION



• ADJUSTMENT ORDER (FLOWCHART)

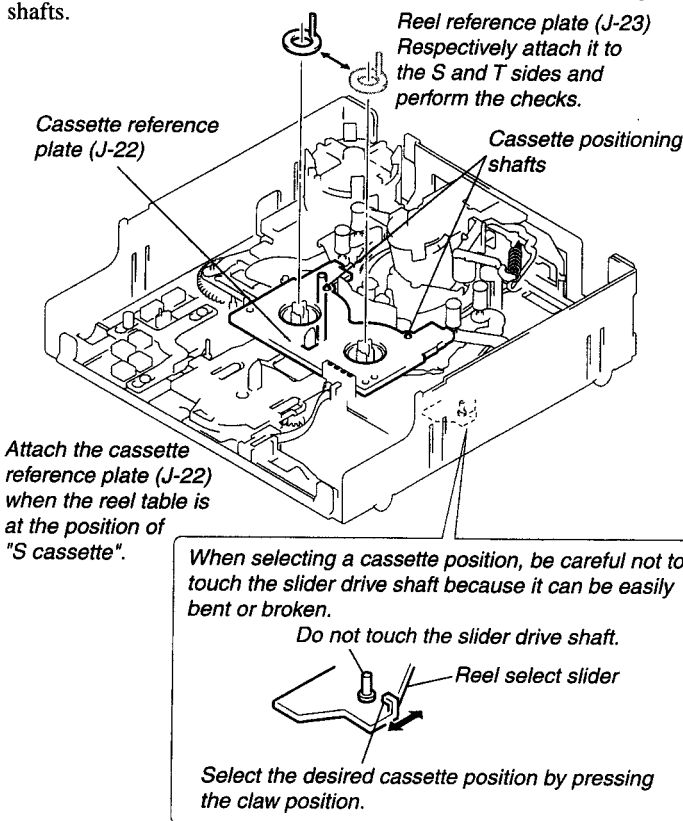


2-4-1. REEL TABLE HEIGHT CHECK AND ADJUSTMENT

1. Preparation before check

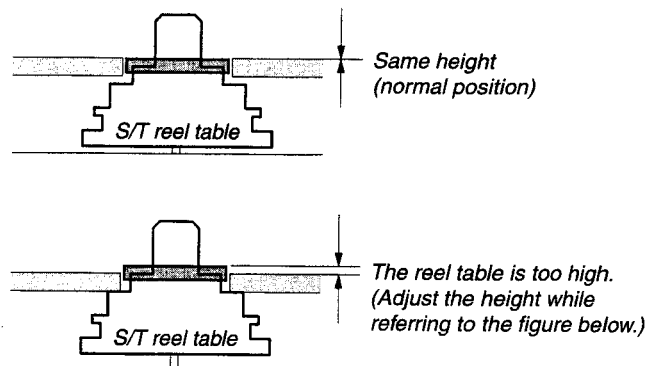
Check that the cassette compartment has already been removed. (Refer to page 5-35.)

Fit the cassette reference plate (J-22) in the cassette positioning shafts.

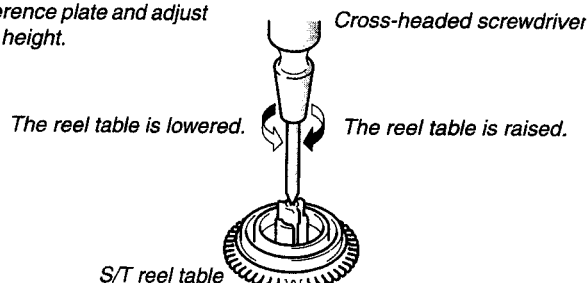


2. Check and adjustment

Put the reel reference plate (J-23) on each reel table. Rotate the screw block of the reel table so that the height of the cassette reference plate is the same as that of the reel reference plate.



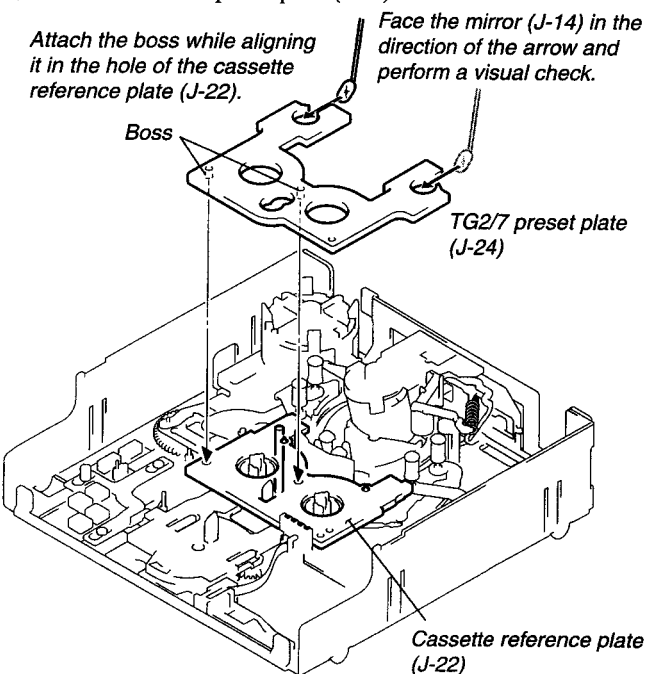
Put the reel and cassette reference plate and adjust the height.



2-4-2. TG1/8 HEIGHT CHECK AND ADJUSTMENT

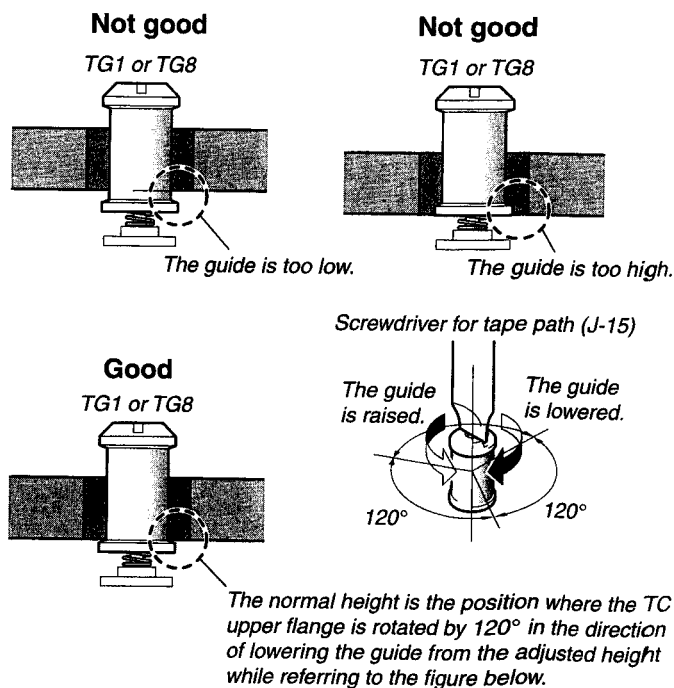
1. Preparation before check

- 1) Check that the cassette compartment block has already been removed. (Refer to page 5-35.)
- 2) Set the mechanism deck to the loading end position (TG2 to 7 already moved to the loading end position and the pinch roller is in the unloading position). Alternatively, set the mechanism deck to the "LE position" using the mode selector II. (Refer to page 5-35.)
- 3) Place the TG2/7 preset plate (J-24).



2. Check and adjustment

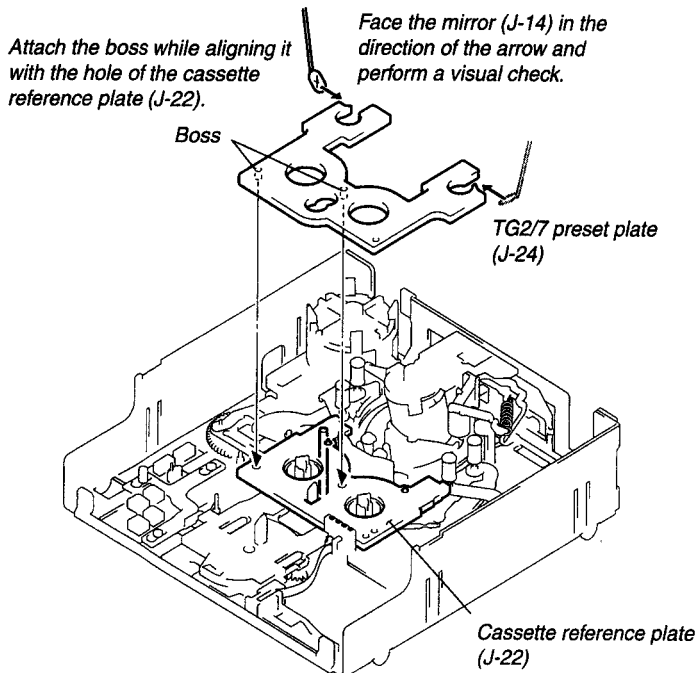
Rotate the TG upper flange until the heights of the TG2/7 preset plate (J-24) and TG1 or TG8 roller block are the same. Alternatively, rotate the TG upper flange by 120° in the direction of lowering the guide from the reference height where the preset plate and roller have the same height.



2-4-3. TG2/7 HEIGHT CHECK AND ADJUSTMENT

1. Preparation before check

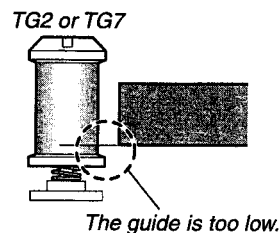
- 1) Check that the cassette compartment block has already been removed. (Refer to page 5-35.)
- 2) Set the mechanism deck to the loading end position (TG2 to 7 already moved to the loading end position and the pinch roller is in the unloading position). Alternatively, set the mechanism deck to the "LE position" using the mode selector II. (Refer to page 5-35.)
- 3) Place the TG2/7 preset plate (J-24).



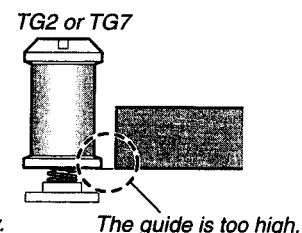
2. Check and adjustment

Rotate the TG upper flange until the height of the TG2/7 preset plate (J-24) and TG2 or TG7 roller block is the same. Alternatively, rotate the TG upper flange of only TG2 by 60° in the direction of raising the guide from the adjusted height while referring to the figure below.

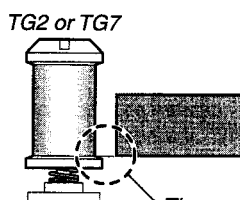
Not good



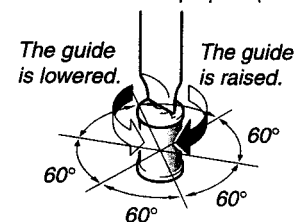
Not good



Good



Screwdriver for tape path (J-15)



The normal height of TG2 is the position where the TC upper flange is rotated by 60° in the direction of raising the guide from the adjusted height while referring to the figure below. The normal height of TG7 is the current one.

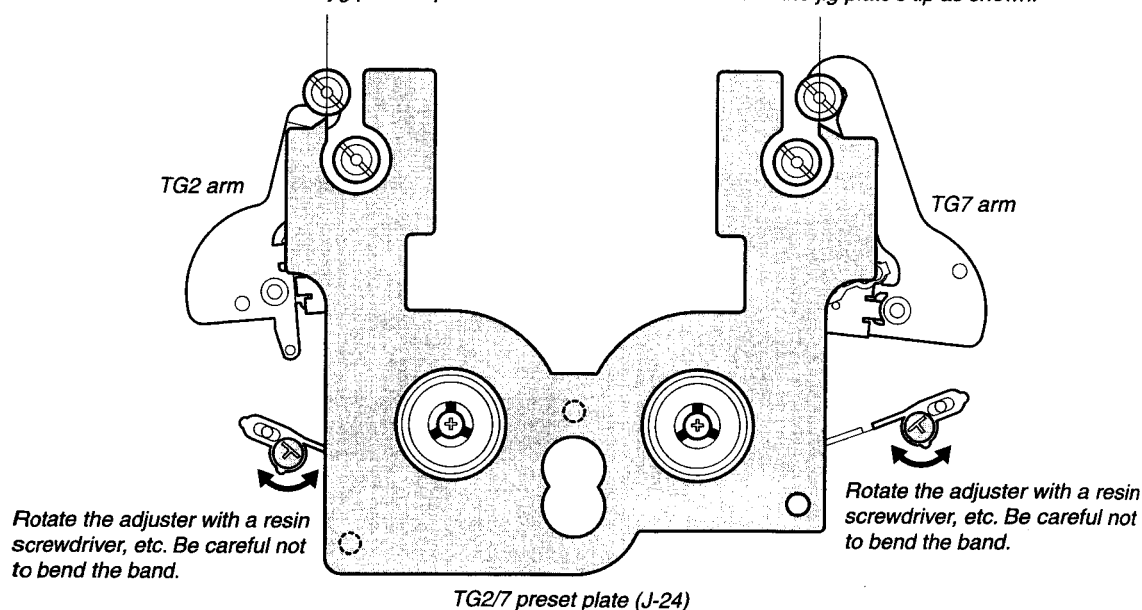
2-4-4. FWD/RVS POSITION CHECK AND ADJUSTMENT

1. Preparation before check

- 1) Check that the cassette compartment block has already been removed. (Refer to page 5-35.)
- 2) Set the mechanism deck to the loading end position (TG2 to 7 already moved to the loading end position and the pinch roller is in the unloading position). Alternatively, set the mechanism deck to the "LE position" using the mode selector II. (Refer to page 5-35.)
- 3) Place the TG2/7 preset plate (J-24).

Align the center of TG2 with the vertically extended line of the jig plate's tip as shown.

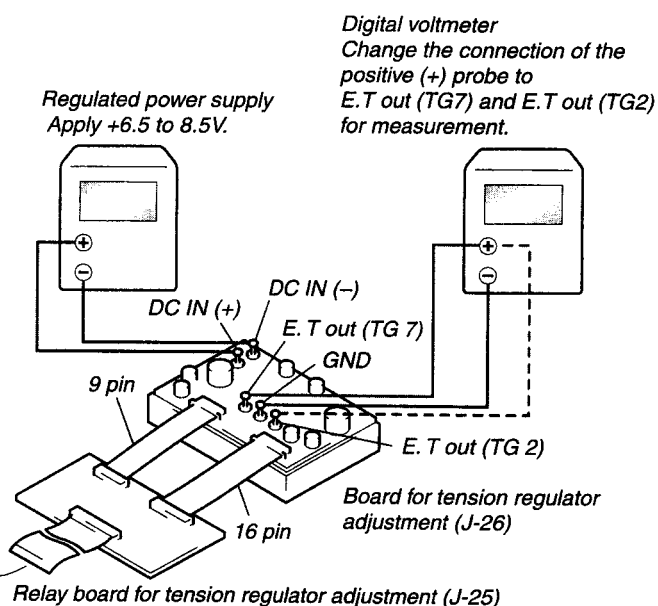
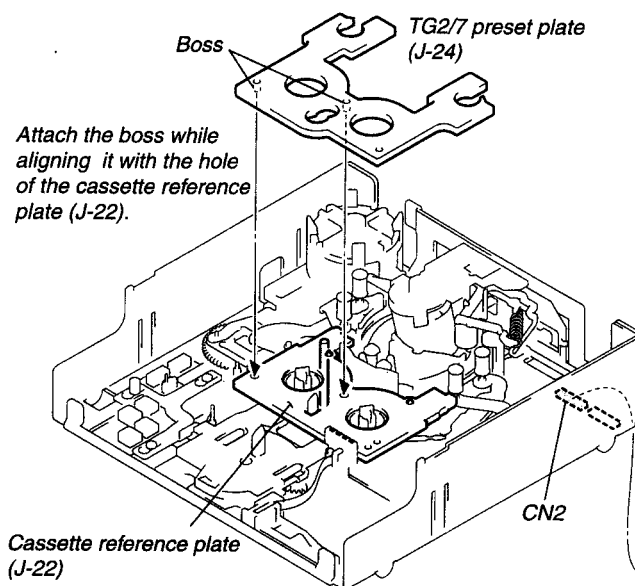
Align the center of TG7 with the vertically extended line of the jig plate's tip as shown.



2-4-5. ELECTRIC TENSION REGULATOR CHECK AND ADJUSTMENT OF TG2/7 ARM

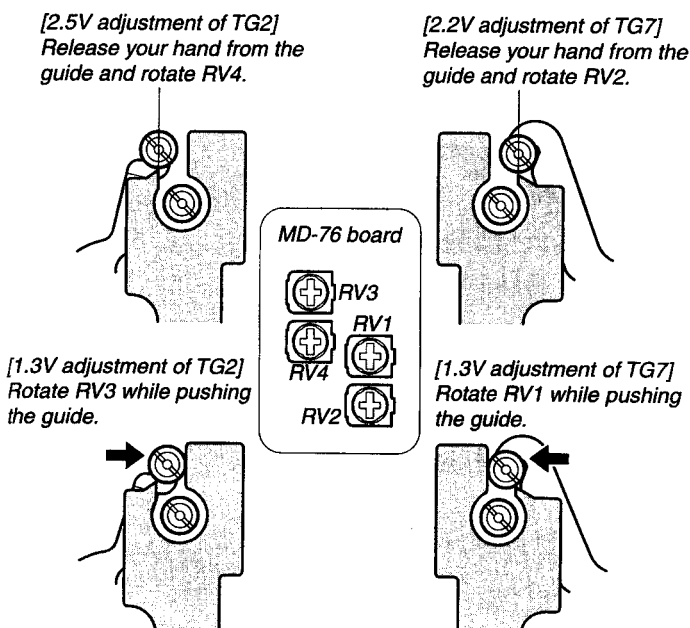
1. Preparation before check

- 1) Check that the cassette compartment block has already been removed. (Refer to page 5-35.)
- 2) Set the mechanism deck to the loading end position (TG2 to 7 already moved to the loading end position and the pinch roller is in the unloading position). Alternatively, set the mechanism deck to the "LE position" using the mode selector II (J-19). (Refer to page 5-35.)
- 3) Attach the cassette reference plate (J-22) and TG2/7 preset plate (J-24). (Refer to page 5-54.)
- 4) Connect the relay board for tension regulator adjustment (J-25) and other equipment as shown in the figure below.

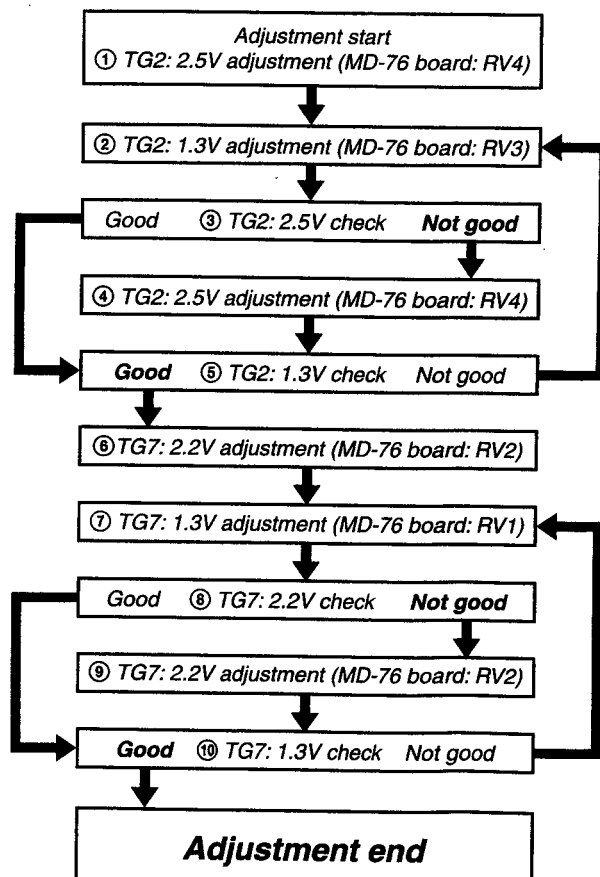


2. Check and adjustment

Connect the positive (+) probe of a digital voltmeter to E.T out (TG2: for measurement of TG2 data) or to E.T out (TG7: for measurement of TG7 data). First, press the guide to the TG2/7 preset plate (J-24), then release your hand from the guide and read the voltmeter value. Adjust RV4 (TG2 side) or RV2 (TG7 side) until the voltmeter measurement is 2.5 ± 0.1 V (TG2 side) or 2.2 ± 0.1 V (TG7 side) when releasing your hand. Then press the guide to the TG2/7 preset plate (J-24). Adjust RV3 (TG2 side) or RV1 (TG7 side) until the voltmeter measurement is 1.3 ± 0.1 V.



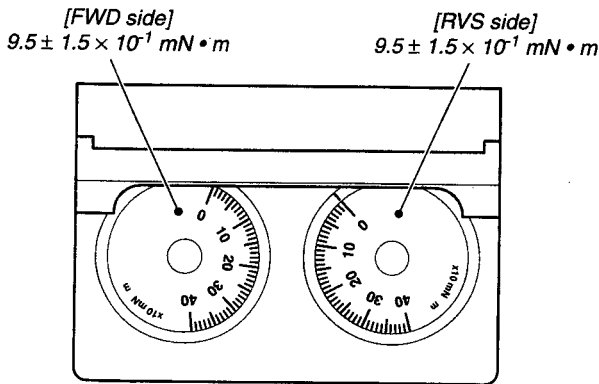
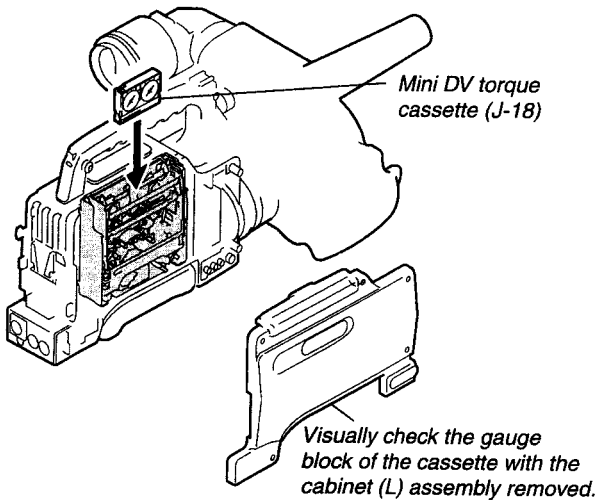
[Adjustment order]



2-4-6. FWD/RVS BACK TENSION CHECK AND ADJUSTMENT

1. Preparation before check

Mount the mechanism deck in the main unit, connect all the connectors, then insert the mini DV torque cassette (J-18) into the mechanism block.

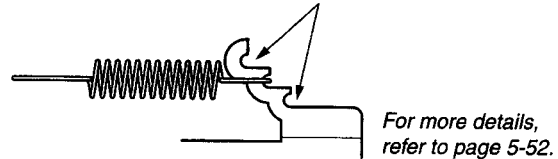


2. Check and adjustment

• FWD (TG2) side

The torque value should satisfy $9.5 \pm 1.5 \times 10^{-1} \text{ mN} \cdot \text{m}$ while the mini DV torque cassette runs in the FWD mode. If it does not satisfy this, take the following measure.

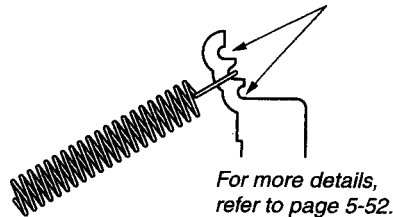
Re-attach the spring to the upper hook if the measurement value is beyond the specifications or re-attach the spring to the lower hook if the measurement value is below the specifications. Then, repeat the measurement.



• RVS (TG7) side

The torque value should satisfy $9.5 \pm 1.5 \times 10^{-1} \text{ mN} \cdot \text{m}$ while the mini DV torque cassette runs in the RVS mode. If it does not satisfy this, take the following measure.

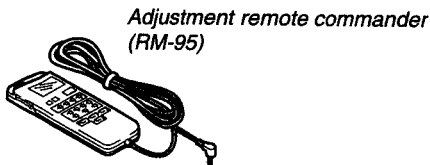
Re-attach the spring to the upper hook if the measurement value is beyond the specifications or re-attach the spring to the lower hook if the measurement value is below the specifications. Then, repeat the measurement. Be careful that these spring blocks may hinder the FL motor.



2-4-7. PREPARATION FOR ADJUSTMENT AND TAPE PATH CHECK

Preparation before adjustment (connection and setting)

1. Mount the mechanism deck in the main unit.
(Connect all the connectors.)
2. Clean the tape running side.
(Refer to Section 2, "Periodic check".)
3. Connect the adjustment remote commander (J-5) to the LANC jack.

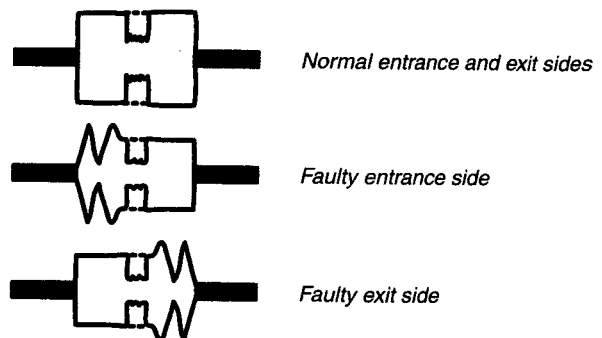


4. Turn the HOLD switch of the adjustment remote commander to the ON position.
5. Select page: 3, address: 33 and set data: 08.
6. Select page: 3, address: 26 and set data: 31.
7. Connect an oscilloscope to VI-156 board CN007 via the CPC-13 jig (J-6082-388-A)(J-8).
Channel 7: VI-156 board, CN007 Pin ② (Note)
External trigger: VI-156 board, CN007 Pin ③

Note: Connect a 75 Ω resistor between pins ② of CN007 and ① (GND).
75 Ω resistor (Parts code: 1-247-804-11)

Tape path check (checking the RF waveform)

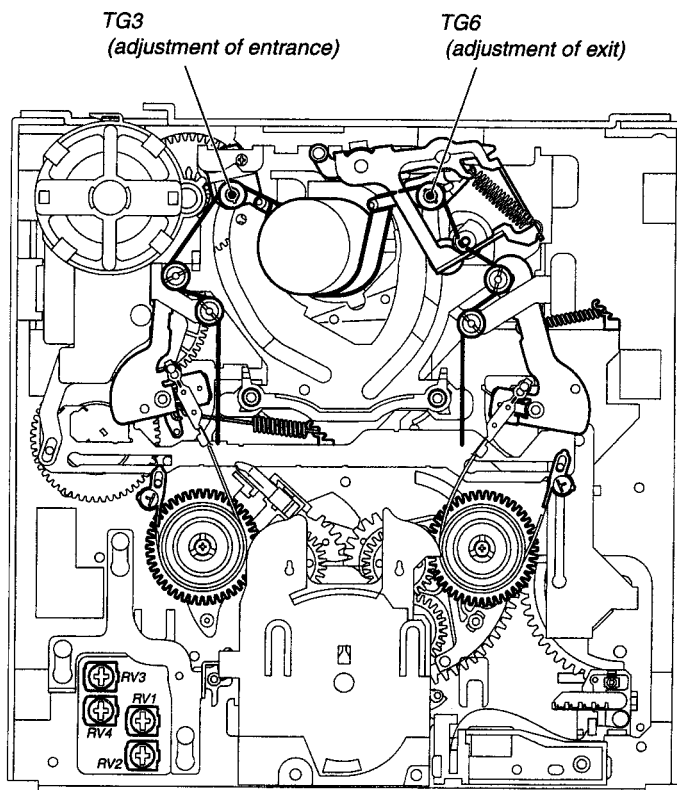
Play back the tracking tape (J-17) and check the states at the entrance and exit of the RF waveform. If it is not flat at either side, perform the adjustments from Adjustment Start-4 in the flowchart on page 5-52.



2-4-8. TRACK ADJUSTMENT AND CHECK (Checking the RF Waveform)

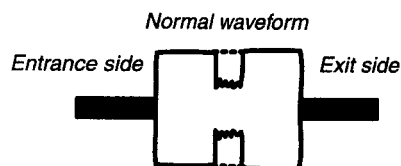
• Checking the RF waveform

Check that the RF waveforms at both the entrance and exit are flat while the tracking tape (J-17) runs in the PLAY mode.



• If not flat

If the waveform at the entrance is bad, rotate TG3. If the waveform at the exit is bad, rotate TG6 to flatten the waveform.



If the waveform at the entrance is bad, rotate TG3 to adjust the waveform.



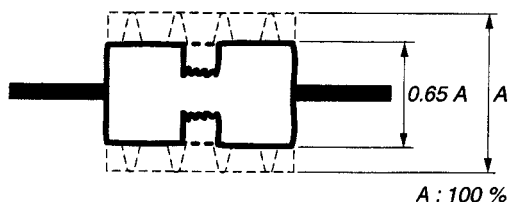
If the waveform at the exit is bad, rotate TG6 to adjust the waveform.

2-4-9. TRACK CHECK

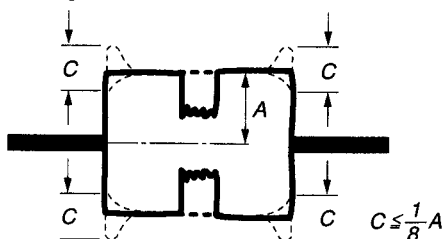
• Check

The difference between the maximum value and minimum value of the waveform amplitude during playback of the tracking tape (J-17) in the FWD mode should be 30% or less of the waveform amplitude during the CUE (or REV) mode (which is taken as 100% as shown). At the same time, there must not exist too much fluctuation of waveform amplitude.

Tracking waveform check -1

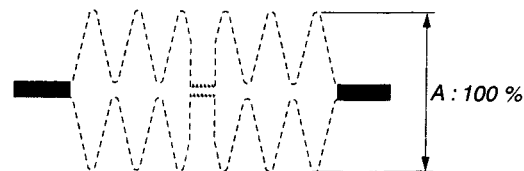


Tracking waveform check -2

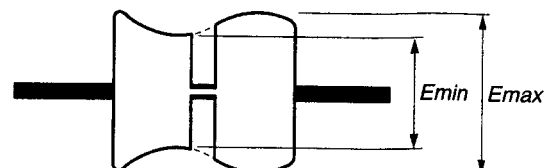


The waveform should not change sharply.

[Waveform in CUE or REV mode]



[Waveform in FWD mode]



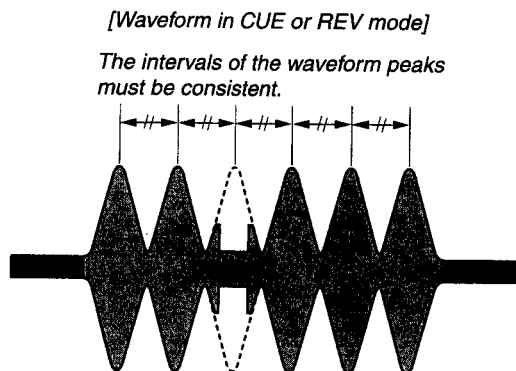
E_{min} : Minimum value
 E_{max} : Maximum value

$$(E_{min} - E_{max}) \leq 30\% \text{ or } \left(\frac{3}{10} A\right)$$

2-4-10. CUE/REV CHECK

• Check

Check that the intervals of the waveform peaks are consistent while the tracking tape (J-17) runs in the CUE mode or REV mode.



• If not even

If the waveform peaks are not even, perform Section 2-4-8, "Tacking adjustment".

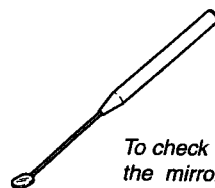
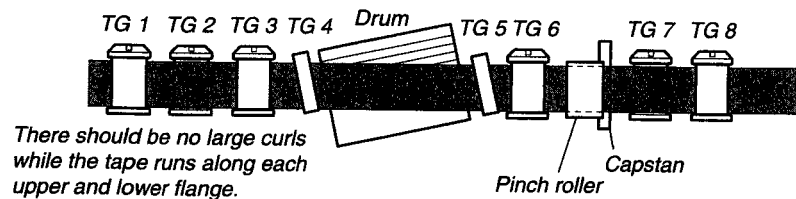
2-4-11. CURL CHECK AND ADJUSTMENT

• Check

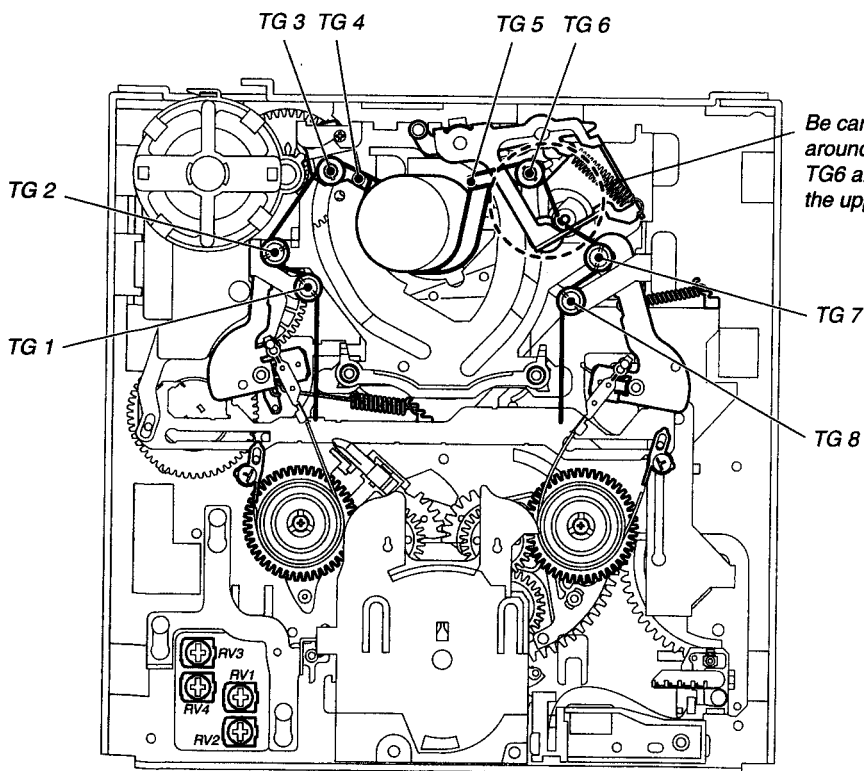
Check that the tape runs along each upper and lower flange while the tracking tape (J-17) runs in the CUE or REV mode. Also check that there are no large curls on each tape guide and pinch roller.

• If the curl is large

Perform the adjustment from Adjustment Start -3 (TG7 side) of the flowchart on page 5-52 again.



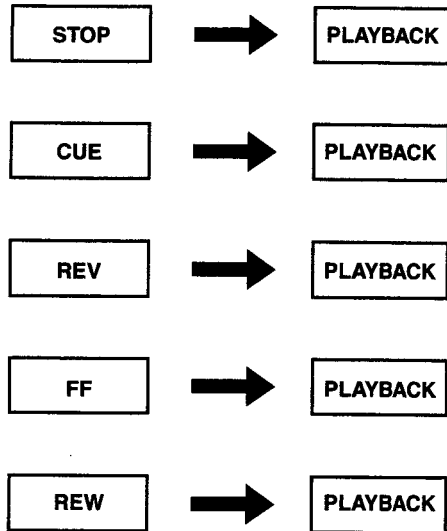
To check the tape path visually, use the mirror (J-14) to facilitate check as the frame of the cassette compartment hinders operations.



2-4-12. RISING CHECK

• Check

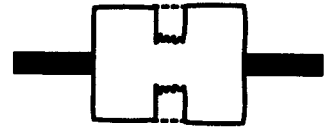
Check that when the tracking tape (J-17) is switched from the STOP, CUE, REV, FF, REW modes to the PLAYBACK mode, the waveform rises horizontally within 2 seconds. (Perform this 2 or 3 times.)



• Check after checking rising

- Check that the tape loads and unloads smoothly.
- Play a self-recorded or already recorded tape, and check that the sound and images are normal.

When switching the modes, the waveform should rise horizontally within 2 seconds.



5-3. VIDEO SECTION ADJUSTMENTS

NTSC model : DSR-250

PAL model : DSR-250P

3-1. PREPARATIONS BEFORE ADJUSTMENTS

Use the following measuring instruments for video section adjustments.

3-1-1. Equipment Required

- 1) TV monitor
- 2) Oscilloscope (dual-phenomenon, band above 30 MHz with delay mode) (Unless specified otherwise, use a 10 : 1 probe.)
- 3) Frequency counter
- 4) Pattern generator with video output terminal.
- 5) Digital voltmeter
- 6) Audio generator
- 7) Audio level meter
- 8) Audio distortion meter
- 9) Audio attenuator
- 10) Regulated power supply
- 11) Alignment tapes
 - Tracking standard (XH2-1A1)
Parts code: 8-967-999-03
 - SW/OL standard (XH2-3)
Parts code: 8-967-997-11
 - Audio operation check for NTSC (XH5-3)
Parts code: 8-967-997-51
 - System operation check for NTSC (XH5-5)
Parts code: 8-967-997-61
 - BIST check for NTSC (XH5-6)
Parts code: 8-967-997-71
 - Audio operation check for PAL (XH5-3P)
Parts code: 8-967-997-55
 - System operation check for PAL (XH5-5P)
Parts code: 8-967-997-66
 - BIST check for PAL (XH5-6P)
Parts code: 8-967-997-76
- 12) Adjustment remote commander (J-6082-053-B)
- 13) CPC-13 jig (J-6082-443-A)

3-1-2. Precautions on Adjusting

- 1) The adjustments of this unit are performed in the VTR mode or camera mode.

To set to the VTR mode, set the MODE switch to "VTR" or set the "Forced VTR Power ON mode" using the adjustment remote commander (Note 1).

To set to the Camera mode, set the MODE switch to "CAMERA" or set the "Forced Camera Power ON mode" using the adjustment remote commander (Note 2).

After completing adjustments, be sure to exit the "Forced VTR Power ON Mode" or "Forced Camera Power ON Mode". (Note 3)

- 2) By setting the "Forced VTR Power ON mode" or "Forced Camera Power ON mode", the video section can be operate even if the cabinet (R) assembly (SW-343 board, PD-126 board, PM-040 board, SB-036 board, AE-023 board, KP-011 board, MS-058 board) has been removed. But removing the cabinet (R) assembly (removing the VI-156 board CN015) means removing the lithium 3V power supply (SW-343 board, BT501), data such as date, time, user-set menus will be lost. After completing adjustments, reset these data. If the cabinet (R) assembly has been removed, the self-diagnosis data, data on history of use (total drum rotation time etc.) will be lost. Before removing, note down the self-diagnosis data and the data on the history use (data of page: 2, address: A2 to AA). (Refer to "SELF-DIAGNOSIS FUNCTION" for the self-diagnosis data, and to "5-4. Service Mode" for the data on the history use.) To remove the cabinet (R) assembly, disconnect the following connectors.

VI-156 board CN014 (30P, 0.5mm)

VI-156 board CN015 (30P, 0.5mm)

VI-156 board CN006 (10P, 0.5mm)

- 3) To open the VI-156 board, disconnect the following connectors. The lens block and camera function switches need not be connected. (Except for "Battery End Adjustment".) To open the VI-156 board, disconnect the following connectors.

VI-156 board CN025 (50P, 0.5mm) (CD-274 board)

VI-156 board CN001 (39P, 0.3mm) (Lens, SE-116 board)

VI-156 board CN002 (27P, 0.3mm) (Lens)

VI-156 board CN004 (6P, 1.0mm) (FS-082 board)

VI-156 board CN020 (6P, 0.5mm) (Iris ring)

VI-156 board CN019 (3P, 1.0mm) (FC-074 board)

VI-156 board CN018 (12P, 1.0mm) (CF-1044 block)

The LL-010 board (LIGHT, LOW CUT, EDIT SEARCH switch) is need not be connected. To open the VI-156 board, disconnect the following connector.

VI-156 board CN021 (4P, 1.0mm)

The ME-019 board (Front microphone amplifier, viewfinder I/F) is need not be connected. (Except for "Battery End Adjustment".) To open the VI-156 board, disconnect the following connectors.

VI-156 board CN016 (12P, 1.5mm)

VI-156 board CN017 (7P, 1.5mm)

The HP-129 board (Headphone jack) and TH-010 board (Remote commander receiver, Tally LED) are need not be connected. To open the VI-156 board, disconnect the following connectors.

VI-156 board CN012 (12P, 1.0mm)

The KY-049 board (VTR function switch) and EJ-034 board (Eject switch) are need not be connected. (Note) To open the VI-156 board, disconnect the following connectors.

VI-156 board CN013 (8P, 0.5mm)

Note: Use the adjustment remote commander to operate the VTR.

To eject the cassette, connect Pin ⑦ of CN013 and GND (Pin ⑧) for a second with a jumper wire.

The DV-031 board (DV connector) is need not be connected. To open the VI-156 board, disconnect the following connectors.

VI-156 board CN010 (6P, 1.5mm)

The XL-003 board (Rear audio input circuit) is need not be connected. (Except for "Battery End Adjustment" and "AUDIO SYSTEM ADJUSTMENT".) To open the VI-156 board, disconnect the following connectors.

VI-156 board CN011 (8P, 1.5mm)

The FS-082 board (Audio level VR, camera function switches) is need not be connected. (Except for "AUDIO SYSTEM ADJUSTMENT".) To open the VI-156 board, disconnect the following connectors.

VI-156 board CN004 (6P, 1.0mm)

Note 1: Setting the "Forced VTR Power ON" mode (VTR mode)

1) Select page: 0, address: 01, and set data: 01.

2) Select page: D, address: 10, set data: 02, and press the PAUSE button of the adjustment remote commander.

The above procedure will enable the VTR power to be turned on with the cabinet (R) assembly removed.

After completing adjustments, be sure to exit the "Forced Power ON mode".

Note 2: Setting the "Forced Camera Power ON" mode (Camera mode)

1) Select page: 0, address: 01, and set data: 01.

2) Select page: D, address: 10, set data: 01, and press the PAUSE button of the adjustment remote commander.

The above procedure will enable the camera power to be turned on with the cabinet (R) assembly removed.

After completing adjustments, be sure to exit the "Forced Power ON mode".

Note 3: Setting the "Forced Memory Power ON" mode (Memory mode)

1) Select page: 0, address: 01, and set data: 01.

2) Select page: D, address: 10, set data: 05, and press the PAUSE button of the adjustment remote commander.

The above procedure will enable the memory power to be turned on with the cabinet (R) assembly removed.

After completing adjustments, be sure to exit the "Forced Power ON mode".

Note 4: Exiting the "Forced Power ON" mode

1) Select page: 0, address: 01, and set data: 01.

2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjustment remote commander.

3) Select page: 0, address: 01, and set data: 00.

3-1-3. HOW TO ENTER RECORD MODE WITHOUT CASSETTE

- 1) Connect the adjustment remote commander to the LANC jack.
- 2) Turn the HOLD switch of the adjustment remote commander to the ON position.
- 3) Close the cassette compartment without the cassette.
- 4) Select page: 3, address: 01, and set data: 0C, and press the PAUSE button of the adjustment remote commander. (The mechanism enters the record mode automatically.)
Note: The function buttons becomes inoperable.
- 5) To quit the record mode, select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjustment remote commander. (Whenever you want to quit the record mode, be sure to quit following this procedure.)

3-1-4. HOW TO ENTER PLAYBACK MODE WITHOUT CASSETTE

- 1) Connect the adjustment remote commander to the LANC jack.
- 2) Turn the HOLD switch of the adjustment remote commander to the ON position.
- 3) Close the cassette compartment without the cassette.
- 4) Select page: 3, address: 01, and set data: 0B, and press the PAUSE button of the adjustment remote commander. (The mechanism enters the playback mode automatically.)
Note: The function buttons becomes inoperable.
- 5) To quit the playback mode, select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjustment remote commander. (Whenever you want to quit the playback mode, be sure to quit following this procedure.)

3-1-5. Adjusting Connectors

Some of the adjusting points of the video section are concentrated at VI-156 board CN007. Connect the measuring instruments via the CPC-13 jig (J-682-443-A). The following table lists the pin numbers and signal names of CN007.

Pin No.	Signal Name	Pin No.	Signal Name
1	GND	11	H START
2	RF MON	12	XHD/PSIG
3	SWP	13	PD VB
4	RF IN/LANC JACK IN	14	PD VR
5	TDO	15	EVF VCO
6	GND	16	GND
7	TCK	17	EVF BL -
8	TDI	18	EVF VG
9	PANEL COM	19	LANC SIG
10	TMS	20	EVF BL +

Table 5-3-1.

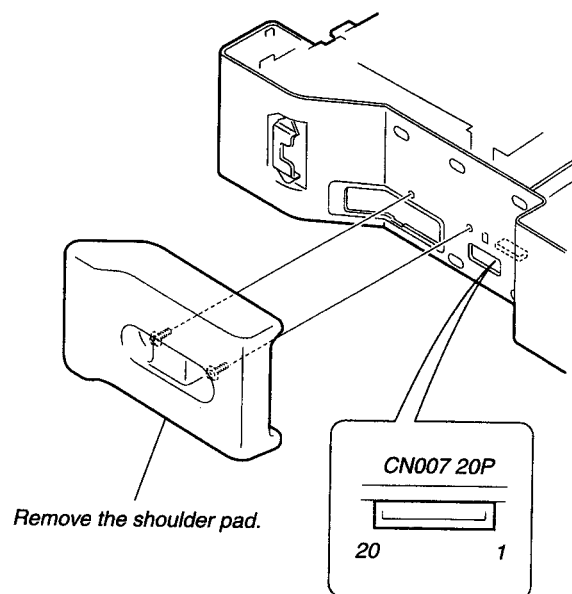


Fig. 5-3-1.

3-1-6. Connecting the Equipment

Connect the measuring instruments as shown in Fig. 5-3-2, and perform the adjustments.

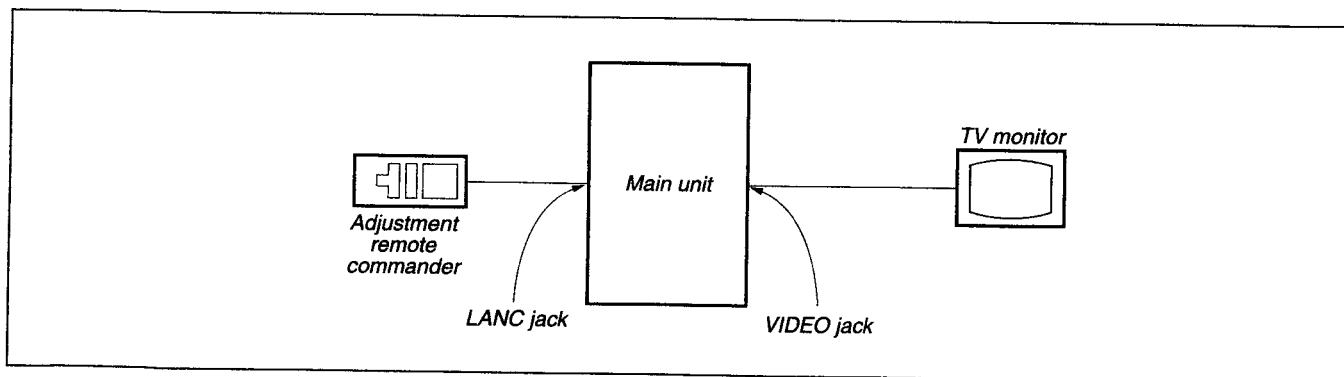


Fig. 5-3-2.

3-1-7. Alignment Tapes

Use the alignment tapes shown in the following table.

Use tapes specified in the signal column of each adjustment.

Name	Use
Tracking standard (XH2-1A1)	Tape path adjustment
SW/OL standard (XH2-3)	Switching position adjustment
Audio operation check (XH5-3 (NTSC), XH5-3P (PAL))	Audio system adjustment
System operation check (XH5-5 (NTSC), XH5-5P (PAL))	Operation check
BIST check (XH5-6 (NTSC), XH5-6P (PAL))	BIST check

Fig. 5-3-3 shows the 75% color bar signals recorded on the alignment tape for Audio Operation Check.

Note: Measure with video terminal (Terminated at 75 Ω)

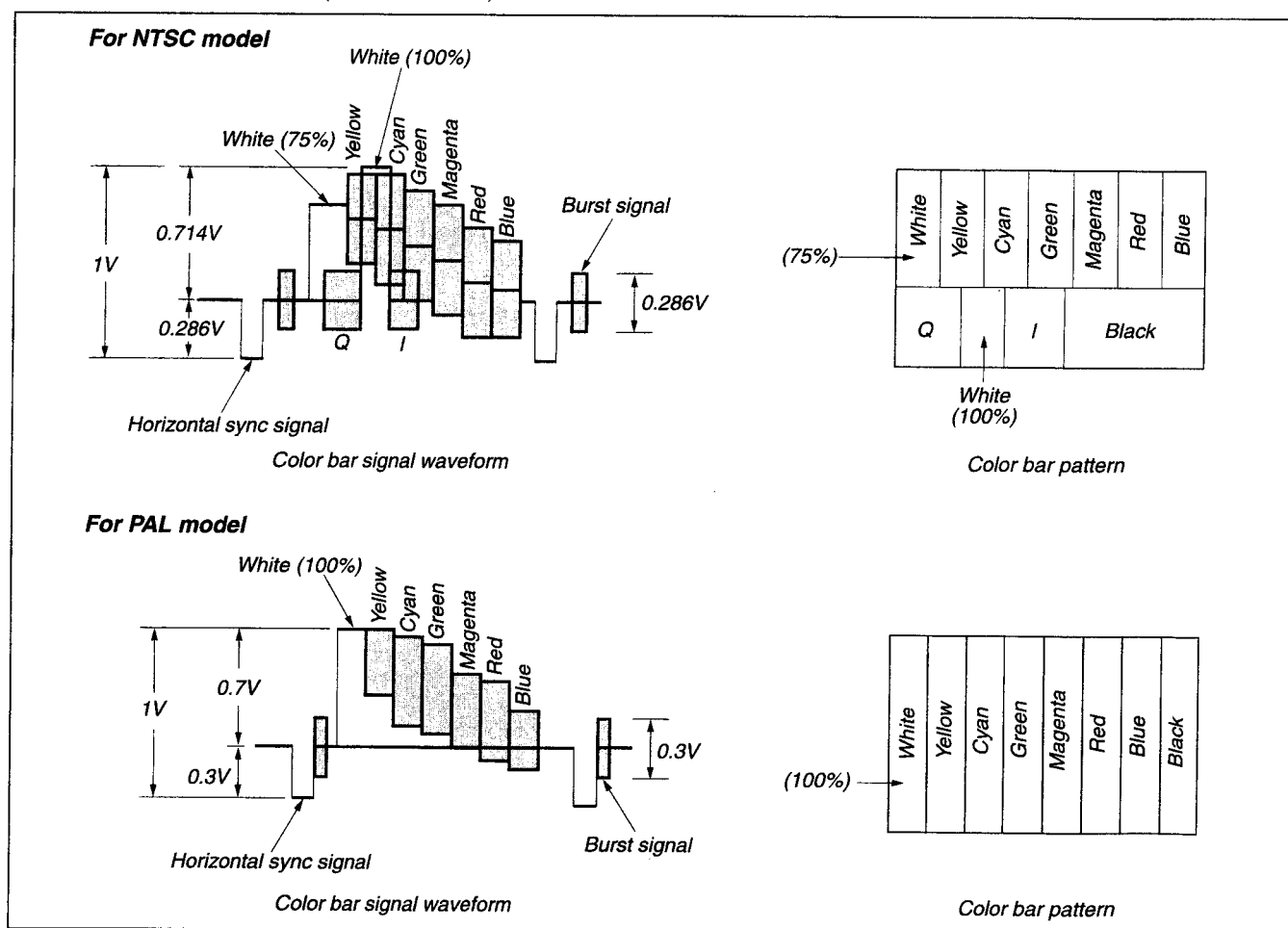


Fig. 5-3-3. Color bar signal of alignment tapes

3-1-8. Input/Output Level and Impedance

Video input/output

Phono jack (Input/output), BNC connector (Output)

Video signal: 1 Vp-p, 75 Ω unbalanced,
sync negative

S video input/output

4-pin mini DIN

Luminance signal: 1 Vp-p, 75 Ω unbalanced,
sync negative

Chrominance signal: 0.286 Vp-p, 75 Ω unbalanced (NTSC)
: 0.300 Vp-p, 75 Ω unbalanced (PAL)

Audio input/output

Phono jack

Input level: 327mV

Input impedance: More than 47k Ω

Output level: 327 mV (at load impedance 47 k Ω)

Output impedance: Below 2.2 k Ω

3-2. SYSTEM CONTROL SYSTEM ADJUSTMENT

1. Initialization of A, B, C, D, E, F, 8 Page Data

If the B, C, D, E, F, 8 page data is erased due to some reason, perform "1-2. INITIALIZATION OF A, B, C, D, E, F, 8 PAGE DATA", of "5-1. CAMERA SECTION ADJUSTMENT"

2. Serial No. Input

2-1. Company ID Input

Write the company ID in the EEPROM (nonvolatile memory).

Page	C
Address	E8, E9, EA, EB, EC

Input method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Input the following data to page: C, addresses: E8 to EC.
Note: Press the PAUSE button of the adjustment remote commander each time to set the data.

Address	Data
E8	08
E9	00
EA	46
EB	01
EC	02

- 3) Select page: 0, address: 01, and set data: 00.

2-2. Serial No. Input

Write the serial No. and model code in the EEPROM (nonvolatile memory). Convert the serial No. on the name plate from decimal to hexadecimal, and write in the EEPROM.

Page	C
Address	ED, EE, EF

Input method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Read the serial No. on the name plate, and take it as D_1 .
Example: If the serial No. is 77881.
 $D_1=77881$
- 3) Obtain D_2 and H_1 corresponding to D_1 from Table 5-3-2.
Example: If D_1 is "77881".
 $D_2=D_1-65536=12345$
 $H_1=FE$

D_1 (Decimal)	D_2 (Decimal)	H_1 (Hexadecimal) (Service model code)
000001 to 065535	D_1	FE
065536 to 131071	$D_1-65536$	FE
131072 to 196607	$D_1-131072$	FE

Table 5-3-2.

- 4) Input H_1 to page: C, address: ED. (Model code input)
Example: If H_1 is "FE".
Select page: C, address: ED, set data: FE, and press the PAUSE button.
- 5) Obtain the maximum decimal not exceeding D_2 from Table 5-3-3, and take this as D_3 .
Example: If D_2 is "12345".
 $D_3=12288$
- 6) Obtain the hexadecimal corresponding to D_3 from Table 5-3-3, and take this as H_3 .
Example: If D_3 is "12288".
 $H_3=3000$
- 7) Obtain the difference D_4 between D_2 and D_3 . (Decimal calculation, $0 \leq D_4 \leq 255$)
 $D_4=D_2-D_3$
Example: If D_2 is "12345" and D_3 is "12288".
 $D_4=12345-12288=57$
- 8) Convert D_4 to hexadecimal, and take this as H_4 .
(Refer to "Hexadecimal-decimal conversion table" in "5-4. Service Mode".)
Example: If D_4 is "57".
 $H_4=39$
- 9) Input the upper 2 digits of H_3 to page: C, address: EE.
Example: If H_3 is "3000".
Select page: C, address: EE, set data: 30, and press the PAUSE button.
- 10) Input H_4 to page: C, address: EF.
Example: If H_4 is "39".
Select page: C, address: EF, set data: 39, and press the PAUSE button.
- 11) Select page: 0, address: 01, and set data: 00.

Decimal (D ₃)	Hexa- decimal (H ₃)	Decimal (D ₃)	Hexa- decimal (H ₃)	Decimal (D ₃)	Hexa- decimal (H ₃)	Decimal (D ₃)	Hexa- decimal (H ₃)	Decimal (D ₃)	Hexa- decimal (H ₃)	Decimal (D ₃)	Hexa- decimal (H ₃)	Decimal (D ₃)	Hexa- decimal (H ₃)	Decimal (D ₃)	Hexa- decimal (H ₃)
0	0000	8192	2000	16384	4000	24576	6000	32768	8000	40960	A000	49152	C000	57344	E000
256	0100	8448	2100	16640	4100	24832	6100	33024	8100	41216	A100	49408	C100	57600	E100
512	0200	8704	2200	16896	4200	25088	6200	33280	8200	41472	A200	49664	C200	57856	E200
768	0300	8960	2300	17152	4300	25344	6300	33536	8300	41728	A300	49920	C300	58112	E300
1024	0400	9216	2400	17408	4400	25600	6400	33792	8400	41984	A400	50176	C400	58368	E400
1280	0500	9472	2500	17664	4500	25856	6500	34048	8500	42240	A500	50432	C500	58624	E500
1536	0600	9728	2600	17920	4600	26112	6600	34304	8600	42496	A600	50688	C600	58880	E600
1792	0700	9984	2700	18176	4700	26368	6700	34560	8700	42752	A700	50944	C700	59136	E700
2048	0800	10240	2800	18432	4800	26624	6800	34816	8800	43008	A800	51200	C800	59392	E800
2304	0900	10496	2900	18688	4900	26880	6900	35072	8900	43264	A900	51456	C900	59648	E900
2560	0A00	10752	2A00	18944	4A00	27136	6A00	35328	8A00	43520	AA00	51712	CA00	59904	EA00
2816	0B00	11008	2B00	19200	4B00	27392	6B00	35584	8B00	43776	AB00	51968	CB00	60160	EB00
3072	0C00	11264	2C00	19456	4C00	27648	6C00	35840	8C00	44032	AC00	52224	CC00	60416	EC00
3328	0D00	11520	2D00	19712	4D00	27904	6D00	36096	8D00	44288	AD00	52480	CD00	60672	ED00
3584	0E00	11776	2E00	19968	4E00	28160	6E00	36352	8E00	44544	AE00	52736	CE00	60928	EE00
3840	0F00	12032	2F00	20224	4F00	28416	6F00	36608	8F00	44800	AF00	52992	CF00	61184	EF00
4096	1000	12288	3000	20480	5000	28672	7000	36864	9000	45056	B000	53248	D000	61440	F000
4352	1100	12544	3100	20736	5100	28928	7100	37120	9100	45312	B100	53504	D100	61696	F100
4608	1200	12800	3200	20992	5200	29184	7200	37376	9200	45568	B200	53760	D200	61952	F200
4864	1300	13056	3300	21248	5300	29440	7300	37632	9300	45824	B300	54016	D300	62208	F300
5120	1400	13312	3400	21504	5400	29696	7400	37888	9400	46080	B400	54272	D400	62464	F400
5376	1500	13568	3500	21760	5500	29952	7500	38144	9500	46336	B500	54528	D500	62720	F500
5632	1600	13824	3600	22016	5600	30208	7600	38400	9600	46592	B600	54784	D600	62976	F600
5888	1700	14080	3700	22272	5700	30464	7700	38656	9700	46848	B700	55040	D700	63232	F700
6144	1800	14336	3800	22528	5800	30720	7800	38912	9800	47104	B800	55296	D800	63488	F800
6400	1900	14592	3900	22784	5900	30976	7900	39168	9900	47360	B900	55552	D900	63744	F900
6656	1A00	14848	3A00	23040	5A00	31232	7A00	39424	9A00	47616	BA00	55808	DA00	64000	FA00
6912	1B00	15104	3B00	23296	5B00	31488	7B00	39680	9B00	47872	BB00	56064	DB00	64256	FB00
7168	1C00	15360	3C00	23552	5C00	31744	7C00	39936	9C00	48128	BC00	56320	DC00	64512	FC00
7424	1D00	15616	3D00	23808	5D00	32000	7D00	40192	9D00	48384	BD00	56576	DD00	64768	FD00
7680	1E00	15872	3E00	24064	5E00	32256	7E00	40448	9E00	48640	BE00	56832	DE00	65024	FE00
7936	1F00	16128	3F00	24320	5F00	32512	7F00	40704	9F00	48896	BF00	57088	DF00	65280	FF00

Table 5-3-3.

3. Battery End Adjustment

Set the battery end voltage.

If the voltage is incorrect, the life of the battery will shorten.

The image at the battery end will also be rough.

Mode	Camera recording
Subject	Arbitrary
Measurement Point	Display data of page: 2, address: 5E
Measuring Instrument	Adjustment remote commander
Adjustment Page	D
Adjustment Address	F0 to F6, F8 to FE

Switch setting:

- 1) AUTO OFF

Connection:

- 1) Connect the regulated power supply and the digital voltmeter to the battery terminal as shown in Fig. 5-3-4.

Preparations before adjustments:

- 1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is $11.0 \pm 0.1\text{Vdc}$.
- 2) Turn off the power supply.
- 3) Turn on the HOLD switch of the adjustment remote commander.
- 4) Turn on the power supply.
- 5) Load a cassette, and set to the camera recording mode.

Adjusting method:

Order	Page	Address	Data	Procedure
	0	01	01	Set the data.
2				Adjust the output voltage of the regulated power supply so that the digital voltmeter display is $11.00 \pm 0.01\text{Vdc}$.
3	2	5E		Read the data, and this data is named Dref.
4	D	F0	Dref	Set the data, and press PAUSE button.
5	D	F8	Dref	Set the data, and press PAUSE button.
6				Convert Dref to decimal notation, and obtain Dref'. (Note1)
7				Calculate DF1' to DF6' and DF9' to DFE' using following equations. (decimal calculation) $DF1' = Dref' + 4$ $DF2' = Dref' + 5$ $DF3' = Dref' + 12$ $DF4' = Dref' + 31$ $DF5' = Dref' + 46$ $DF6' = Dref' + 62$ $DF9' = Dref' + 4$ $DFA' = Dref' + 5$ $DFB' = Dref' + 8$ $DFC' = Dref' + 12$ $DFD' = Dref' + 16$ $DFE' = Dref' + 23$
8				Convert DF1', DF2', DF3', DF4', DF5', DF6', DF9', DFA', DFB', DFC', DFD' and DFE' to decimal notation, and obtain DF1, DF2, DF3, DF4, DF5, DF6, DF9, DFA, DFB, DFC, DFD and DFE. (Note1)

Order	Page	Address	Data	Procedure
9	D	F1	DF1	Set the data, and press PAUSE button.
10	D	F2	DF2	Set the data, and press PAUSE button.
11	D	F3	DF3	Set the data, and press PAUSE button.
12	D	F4	DF4	Set the data, and press PAUSE button.
13	D	F5	DF5	Set the data, and press PAUSE button.
14	D	F6	DF6	Set the data, and press PAUSE button.
15	D	F9	DF9	Set the data, and press PAUSE button.
16	D	FA	DFA	Set the data, and press PAUSE button.
17	D	FB	DFB	Set the data, and press PAUSE button.
18	D	FC	DFC	Set the data, and press PAUSE button.
19	D	FD	DFD	Set the data, and press PAUSE button.
20	D	FE	DFE	Set the data, and press PAUSE button.
21	0	01	00	Set the data.

Note1: Refer to Table 5-4-1. "Hexadecimal-decimal conversion table" of "5-4.Service mode".

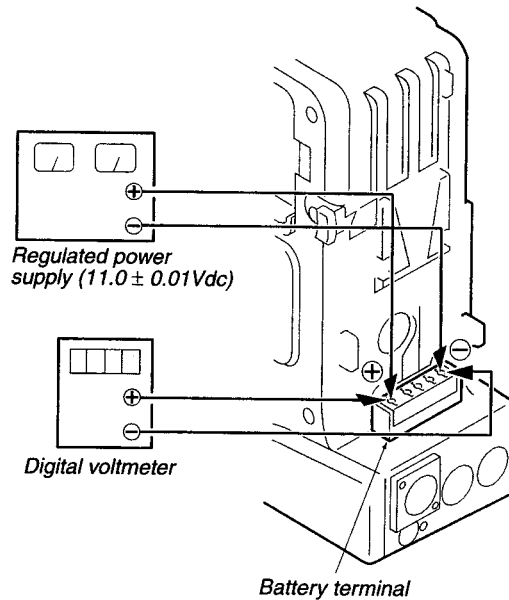


Fig. 5-3-4.

3-3. SERVO AND RF SYSTEM ADJUSTMENT

Before perform the servo and RF system adjustments, check that the specified value of "27 MHz Origin Oscillation Adjustment" of "CAMERA SYSTEM ADJUSTMENT" is satisfied.

Adjusting Procedure:

1. Cap FG duty adjustment
2. PLL f_0 & LPF f_0 adjustment
3. Switching position adjustment
4. AGC center level
5. APC & AEQ adjustment
6. PLL f_0 & LPF f_0 final adjustment

1. Cap FG Duty Adjustment (VI-156 board)

Set the Cap FG signal duty cycle to 50% to establish an appropriate capstan servo. If deviated, the uneven rotation of capstan and noise can occur.

Measurement Point	Display data of page: 3, address: 03
Measuring Instrument	Adjustment remote commander
Adjustment Page	C
Adjustment Address	16
Specified Value	00

Adjusting method:

Order	Page	Address	Data	Procedure
1				Eject the cassette.
2	0	01	01	Set the data.
3	3	01	1B	Set the data, and press PAUSE button.
4	3	02		Check that the data changes in the following order. "1B" → "2B" → "00"
5	3	03		Check that the data is "00". (Note)
6	0	01	00	Set the data.
7				Press EJECT button.

Note: If the data is "01", adjustment has errors or the mechanism deck is defective.

2. PLL f_0 & LPF f_0 Adjustment (VI-156 board)

Mode	VTR stop
Measurement Point	Display data of page: 3, address: 03
Measuring Instrument	Adjustment remote commander
Adjustment Page	C
Adjustment Address	1F, 20, 22, 29
Specified Value	Bit2, bit3 and bit6 are "0"

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	3	01	30	Set the data, and press PAUSE button.
3	3	02		Check that the data changes to "00".
4	3	03		Check that the data is "00". (Note)
5	0	01	00	Set the data.

Note: If the data is other than "00", there are errors.

For the error contents, see the following table. (For the bit values, refer to "5-4. SERVICE MODE", "4-3. 3. Bit value discrimination".)

Bit value of page: 3, address: 03 data	Error contents
bit 6 = 1	LPF f_0 is defective
bit 3 = 1	PLL f_0 final adjustment is defective
bit 2 = 1	PLL f_0 final adjustment time-out

3. Switching Position Adjustment (VI-156 board)

Mode	VTR playback
Signal	SW/OL reference tape (XH2-3)
Measurement Point	Display data of page: 3, address: 03
Measuring Instrument	Adjustment remote commander
Adjustment Page	C
Adjustment Address	10, 11, 12, 13
Specified Value	00

Adjusting method:

Order	Page	Address	Data	Procedure
1				Insert the SW/OL reference tape and enter the VTR STOP mode.
2	0	01	01	Set the data.
3	3	21		Check that the data is "02". (Note1)
4	3	01	0D	Set the data, and press PAUSE button.
5	3	02		Check that the data changes to "00".
6	3	03		Check that the data is "00". (Note2)
7	0	01	00	Set the data.

Note1: If the data of page: 3, address: 21 is "72", the tape top being played. After playing the tape for 1 to 2 seconds, stop it, perform step 4 and higher.

Note2: If bit 0 of the data is "1", the even channel is defective. If bit 1 is "1", the odd channel is defective. Contents of the defect is written into page: C, addresses: 10 and 12. See the following table. (For the bit values, refer to "5-4. SERVICE MODE", "4-3. 3. Bit value discrimination".)

When the even channel is defective

Data of page: C, address: 10	Contents of defect
EE	Writing into EEPROM (IC502) is defective
E8	Adjustment data is out of range
E7	No data is returned from IC301 (CAIN)

When the odd channel is defective

Data of page: C, address: 12	Contents of defect
EE	Writing into EEPROM (IC502) is defective
E8	Adjustment data is out of range
E7	No data is returned from IC301 (CAIN)

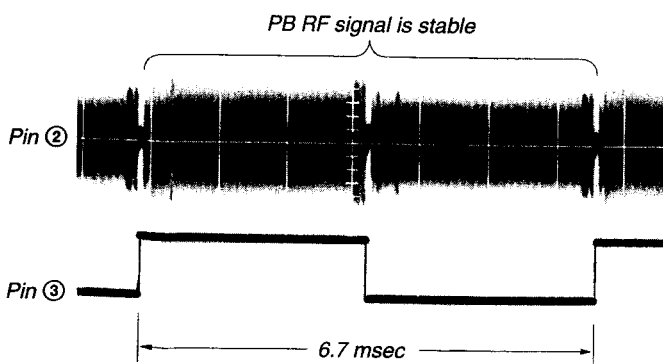


Fig. 5-3-5.

4. AGC Center Level and APC & AEQ Adjustment

4-1. Preparations before adjustments

Mode	Camera recording
Subject	Arbitrary

Adjusting method:

Order	Page	Address	Data	Procedure
1	2	30	40	Set the data.
2				Record the camera signal for three minutes.

4-2. AGC Center Level Adjustment (VI-156 board)

Mode	Playback
Signal	Recorded signal at "Preparations before adjustments"
Measurement Point	Pin ② of CN007 (RF MON) (Note 1) Ext. trigger: Pin ③ of CN007 (SWP)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	1E
Specified Value	The data of page: 3, address: 03 is "00"

Note 1: Connect a 75Ω resistor between Pin ② and Pin ① (GND) of CN007.
75Ω resistor (Parts code: 1-247-804-11)

Adjusting method:

Order	Page	Address	Data	Procedure
1				Playback the recorded signal at "Preparations before adjustments"
2	0	01	01	Set the data.
3	3	33	08	Set the data.
4				Confirm that the playback RF signal is stable. (Fig. 5-3-5.)
5	3	01	23	Set the data, and press PAUSE button.
6	3	02		Check that the data is "00".
7	3	03		Check that the data is "00". (Note2)
8				Perform "APC & AEQ Adjustment".

Note2: If the data of page: 3, address: 03 is other than "00", adjustment has errors. (Take an appropriate remedial measures according to the errors referring to the following table.)

Data	Contents of defect
20	Perform re-adjustment. (Note 3)
30	The machine is defective
40	Perform re-adjustment. (Note 3)
50	The machine is defective

Note 3: If this data is displayed twice successively, the machine is defective.

4-3. APC & AEQ Adjustment (VI-156 Board)

Mode	Playback
Signal	Recorded signal at "Preparations before adjustments"
Measurement Point	Pin ② of CN007 (RF MON) (Note 1) Ext. trigger: Pin ③ of CN007 (SWP)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	18, 19, 1B, 1C, 21, 2C
Specified Value	The data of page: 3, address: 03 is "00"

Note 1: Connect a 75Ω resistor between Pin ② and Pin ① (GND) of CN007.

75Ω resistor (Parts code: 1-247-804-11)

Note 2: The "AGC Center Level Adjustment" must have already been completed before starting this adjustment.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Playback the recorded signal at "Preparations before adjustments"
2	0	01	01	Set the data.
3	3	33	08	Set the data.
4				Confirm that the playback RF signal is stable. (Fig. 5-3-6.)
5	3	01	07	Set the data, and press PAUSE button.
6	3	02		Check that the data changes from "07" to "00" in about 30 seconds after pressing PAUSE button.
7	3	03		Check that the data is "00". (Note3)
8				Perform "Processing after Completing Adjustments".

Note3: If the data is other than "00", adjustment has errors. Take an appropriate remedial measures according to the errors referring to the following table.

Data	Contents of defect
20	Perform re-adjustment. (Note 4)
30	The machine is defective
50	Perform re-adjustment. (Note 4)
60	The machine is defective
80	The machine is defective

Note 4: If this data is displayed twice successively, the machine is defective.

4-4. Processing after Completing Adjustments

Order	Page	Address	Data	Procedure
1	2	30	00	Set the data.
2	3	33	00	Set the data.
3	0	01	00	Set the data.

5. PLL f_0 & LPF f_0 Final Adjustment (VI-156 board)

Mode	VTR stop
Signal	Arbitrary
Measurement Point	Display data of page: 3, address: 03
Measuring Instrument	Adjustment remote commander
Adjustment Page	C
Adjustment Address	1F, 20, 22, 29
Specified Value	Bit2, bit3 and bit6 are "0"

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	3	01	30	Set the data, and press PAUSE button.
3	3	02		Check that the data changes to "00".
4	3	03		Check that bit2, bit3 and bit6 of the data are "00". (Note)
5	0	01	00	Set the data.

Note: If bit2, bit3 or bit 6 of the data is "1", there are errors.
For the error contents, see the following table. (For the bit values, refer to "5-4. SERVICE MODE", "4-3. 3. Bit value discrimination".)

Bit value of page: 3, address: 03	Error contents
bit 6 = 1	LPF f_0 is defective
bit 3 = 1	PLL f_0 final adjustment is defective
bit 2 = 1	PLL f_0 final adjustment time-out

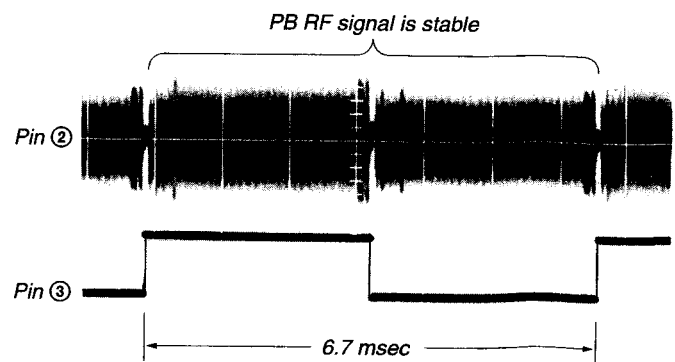


Fig. 5-3-6.

3-4. VIDEO SYSTEM ADJUSTMENTS

Before perform the video system adjustments, check that the specified value of “27MHz Origin Oscillation Adjustment” of “CAMERA SYSTEM ADJUSTMENT” is satisfied.

3-4-1. Base Band Block Adjustments

1. Chroma BPF f₀ Adjustment (VI-156 board)

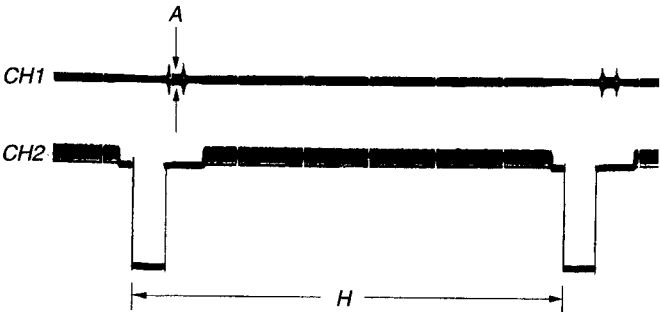
Set the center frequency of IC1301 chroma band-pass filter.

Mode	Camera
Subject	All black (Cover the lens with the lens cap)
Measurement Point	CH1: Chroma signal terminal of S VIDEO jack (75Ω terminated) CH2: Y signal terminal of S VIDEO jack (75Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	28
Specified Value	A = 100mVp-p or less B = 200mVp-p or more

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2				Check that the burst signal (B) is output to the chroma signal terminal of S VIDEO jack.
3	3	0C	04	Set the data, and press PAUSE button.
4	C	28		Change the data for minimum amplitude of the burst signal level (A). (The data should be “00” to “07”.)
5	C	28		Press PAUSE button.
6	3	0C	00	Set the data, and press PAUSE button.
7				Check that the burst signal level (B) satisfies the specified value.
8	0	01	00	Set the data.

When the data of page: 3, address: 0C, is 04:



When the data of page: 3, address: 0C, is 00:

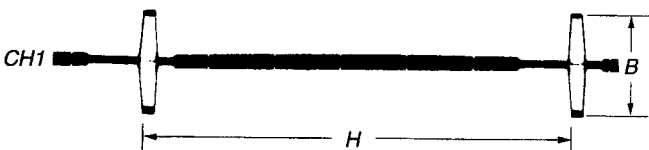


Fig. 5-3-7.

2. S VIDEO OUT Y Level Adjustment (VI-156 board)

Mode	Camera
Subject	Arbitrary
Measurement Point	Y signal terminal of S VIDEO jack (75Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	25
Specified Value	A = 1000 ± 14mV

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	2	35		Note down the data.
3	2	35	01	Set the data.
4	3	0C	02	Set the data, and press PAUSE button.
5	C	25		Change the data and set the Y signal level (A) to the specified value.
6	C	25		Press PAUSE button.
7	3	0C	00	Set the data, and press PAUSE button.
8	2	35		Set the data that is noted down at step 2.
9	0	01	00	Set the data.

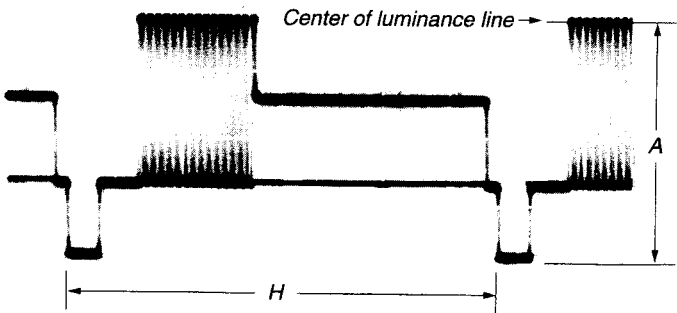


Fig. 5-3-8.

3. S VIDEO OUT Chroma Level Adjustment
(VI-156 board)

Mode	Camera
Subject	Arbitrary
Measurement Point	Chroma signal terminal of S VIDEO jack (75Ω terminated) External trigger: Y signal terminal of S VIDEO jack
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	26, 27
Specified Value	Cr level: A = 714 ± 14mV(NTSC) A = 700 ± 14mV(PAL) Cb level: B = 714 ± 14mV(NTSC) B = 700 ± 14mV(PAL) Burst level: C = 286 ± 6mV(NTSC) C = 300 ± 6mV(PAL)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	2	35		Note down the data.
3	2	35	01	Set the data.
4	3	0C	02	Set the data, and press PAUSE button.
5	C	26		Change the data and set the Cr signal level (A) to the specified value.
6	C	26		Press PAUSE button.
7	C	27		Change the data and set the Cb signal level (B) to the specified value.
8	C	27		Press PAUSE button.
9				Check that the burst signal level (C) is satisfied the specified value.
10	3	0C	00	Set the data, and press PAUSE button.
11	2	35		Set the data that is noted down at step 2.
12	0	01	00	Set the data.

4. VIDEO OUT Y, Chroma Level Check (VI-156 board)

Mode	Camera
Subject	Arbitrary
Measurement Point	VIDEO jack (75Ω terminated)
Measuring Instrument	Oscilloscope
Specified Value	Sync level: A = 286 ± 18mV(NTSC) A = 300 ± 18mV(PAL) Burst level: B = 286 ± 18mV(NTSC) B = 300 ± 18mV(PAL)

Adjusting method:

Order	Page	Address	Data	Procedure
1	2	35		Note down the data.
2	2	35	01	Set the data.
3	3	0C	02	Set the data, and press PAUSE button.
4				Check that the sync signal level (A) satisfies the specified value.
5				Check that the burst signal level (B) satisfies the specified value.
6	3	0C	00	Set the data, and press PAUSE button.
7	2	35		Set the data that is noted down at step 1.
8	0	01	00	Set the data.

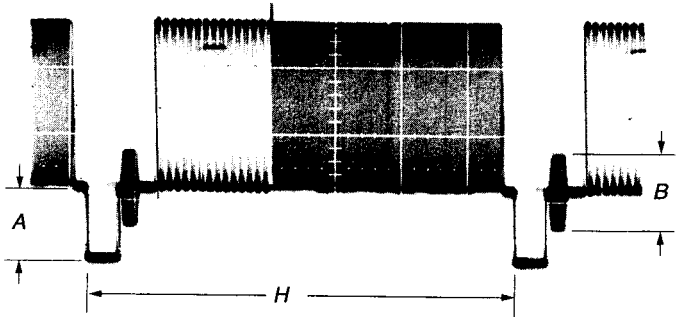


Fig. 5-3-10.

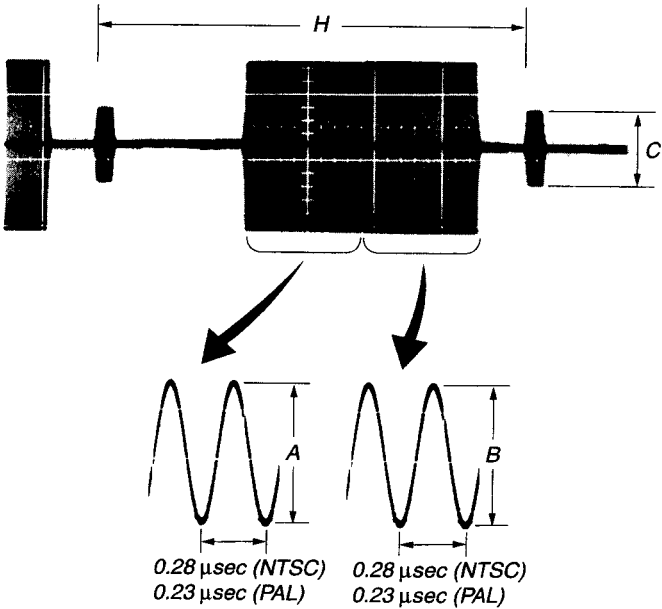


Fig. 5-3-9.

3-4-2. BIST Check

Switch setting:

LCD panel Open

1. Playback System Check

1-1. Preparations for Playback

Order	Page	Address	Data	Procedure
1				Set the MODE switch to VTR position.
2				Connect the adjustment remote commander and set the HOLD switch to ON (SERVICE) position.
3	0	01	01	Set the data.
4	C	42	00	Set the data, and press PAUSE button.
5				Playback the BIST check tape. (XH5-6 (NTSC), XH5-6P (PAL))

Note: Perform the following checks in the playback mode.

1-2. IC301 TRX (RF) PB BIST Check

Order	Page	Address	Data	Procedure
1	3	70	04	Set the data, and press PAUSE button.
2	3	70	00	Set the data, and press PAUSE button.
3	3	73		Check that the data is equal to either of the following values. And memorize the case number of the value. NTSC model: 63 (Case1), C5 (Case2), 75 (Case3), D3 (Case4), 59 (Case5), FF (Case6) PAL model: 86 (Case1), AA (Case2), 90 (Case3)
4	3	74		Check that the data is equal to the following value which case number is equal to that of address 73. NTSC model: 84 (Case1), 55 (Case2), 07 (Case3), D6 (Case4), 01 (Case5), D0 (Case6) PAL model: 35 (Case1), 33 (Case2), B6 (Case3)
5	3			If the data of address 73 and address 74 are correct, IC301 TRX (RF) playback system is normal.

1-3. IC301 AUD (ABUS) PB BIST Check

Order	Page	Address	Data	Procedure
1	3	11	04	Set the data, and press PAUSE button.
2	3	12	08	Set the data, and press PAUSE button.
3	3	12	00	Set the data, and press PAUSE button.
4	3	13	03	Set the data, and press PAUSE button.
5	3	14		Check that the data is the following value. NTSC model: 41 PAL model: 2D
6	3	15		Check that the data is the following value. NTSC model: 81 PAL model: 7C
7	3			If the data of address 14 and address 15 are correct, IC301 AUD (ABUS) playback system is normal.

1-4. IC301 VFD PB BIST Check

• EX Y BIST Check

Order	Page	Address	Data	Procedure
1	3	12	10	Set the data, and press PAUSE button.
2	3	12	00	Set the data, and press PAUSE button.
3	3	13	04	Set the data, and press PAUSE button.
4	3	14		Check that the data is the following value. NTSC model: FB PAL model: 54
5	3	15		Check that the data is the following value. NTSC model: F4 PAL model: ED
6	3			If the data of address 14 and address 15 are correct, IC301 EX Y playback system is normal.

1-5. IC301 ENCODER BIST Check

• Preparations

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	8	21	0F	Set the data, and press PAUSE button.

• ENCODER Ya BIST Check

Order	Page	Address	Data	Procedure
1	3	10	8B	Set the data, and press PAUSE button.
2	3	12	10	Set the data, and press PAUSE button.
3	3	12	00	Set the data, and press PAUSE button.
4	3	13	04	Set the data, and press PAUSE button.
5	3	14		Check that the data is the following value. NTSC model: FD PAL model: 58
6	3	15		Check that the data is the following value. NTSC model: 3E PAL model: BE
7	3			If the data of address 14 and address 15 are correct, IC301 ENCODER Ya playback system is normal.

• ENCODER Yb BIST Check

Order	Page	Address	Data	Procedure
1	3	10	8C	Set the data, and press PAUSE button.
2	3	12	10	Set the data, and press PAUSE button.
3	3	12	00	Set the data, and press PAUSE button.
4	3	13	04	Set the data, and press PAUSE button.
5	3	14		Check that the data is the following value. NTSC model: 94 PAL model: A1
6	3	15		Check that the data is the following value. NTSC model: D6 PAL model: ED
7	3			If the data of address 14 and address 15 are correct, IC301 ENCODER Yb playback system is normal.

1-6. Processing after Completing Playback System Check

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	C	42	0A	Set the data, and press PAUSE button.
3	8	21	03	Set the data, and press PAUSE button.
4	0	01	00	Set the data.
5				Turn off the power and turn on again.

3-5. AUDIO SYSTEM ADJUSTMENTS

Switch setting:

AUDIO INPUT CH1 (SW-343 board)	REAR
AUDIO INPUT CH2 (SW-343 board)	REAR
AUDIO SELECT CH1 (SW-343 board)	AUTO
AUDIO SELECT CH2 (SW-343 board)	AUTO
AUDIO MONITOR (SW-343 board)	MIX
CH1 LINE/MIC SELECT (XL-003 board)	MIC
CH2 LINE/MIC SELECT (XL-003 board)	MIC
A REF REVEL (Menu setting)	-12dB (Note)

Note: Except for "Playback Level Check".

[Connection of Audio System Measuring Devices]

Connect the audio system measuring devices as shown in Fig. 5-3-11.

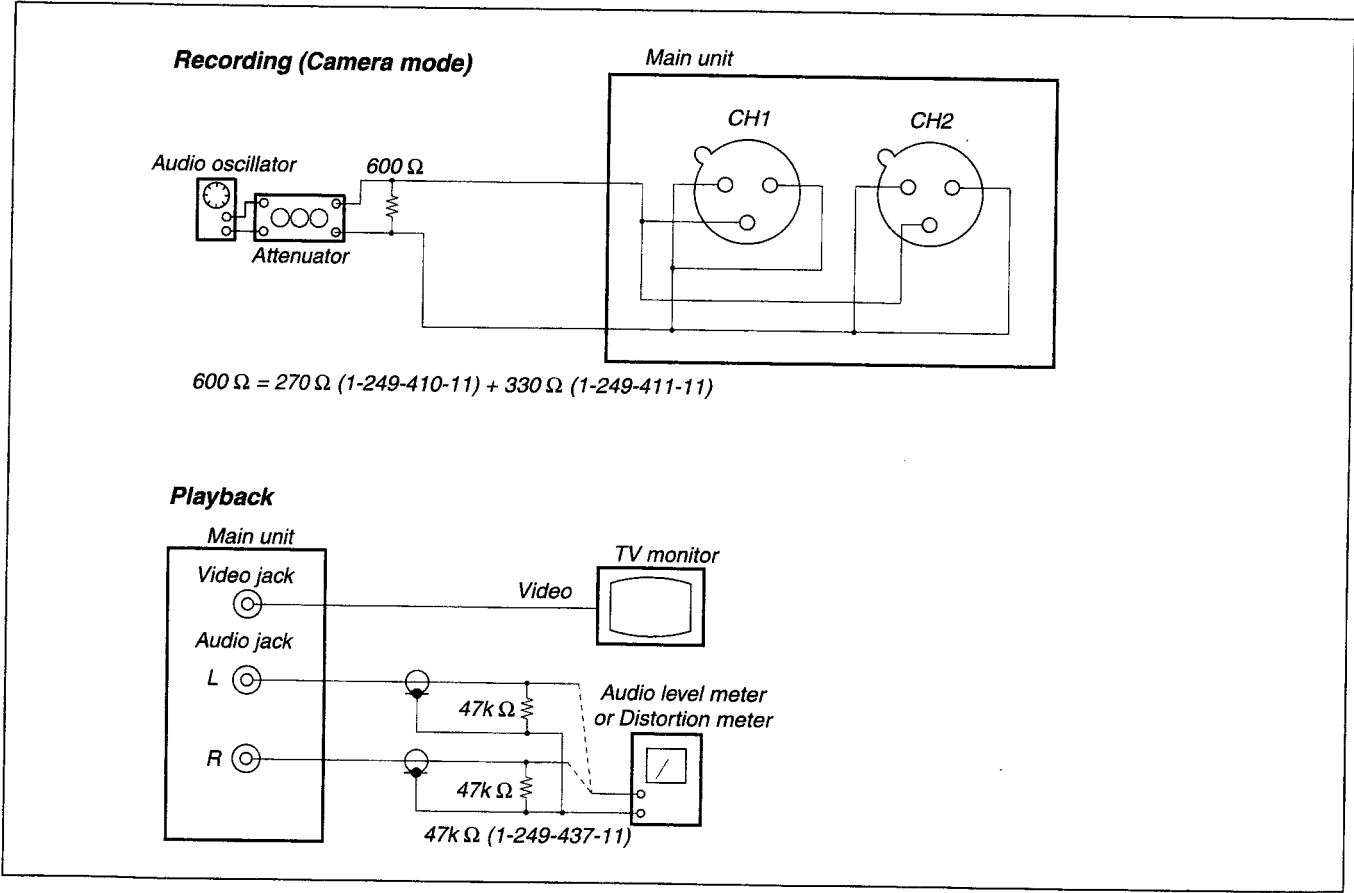


Fig. 5-3-11.

1. Playback Level Check

Mode	VTR playback
Signal	Alignment tape: For audio operation check (XH5-3 (NTSC)) (XH5-3P (PAL))
Measurement Point	Audio CH1 or CH2 terminal of AUDIO jack
Measuring Instrument	Audio level meter and frequency counter
Specified Value	32 kHz mode: 1 kHz, $+8.2 \pm 2.0$ dBs 48 kHz mode: 1 kHz, $+8.2 \pm 2.0$ dBs 44.1 kHz mode: The 7.35kHz signal level during EMP OFF is $+8.2 \pm 2.0$ dBs. The 7.35kHz signal level during EMP ON is -6.2 ± 2.0 dB from the signal level during EMP OFF.

Menu setting:

A REF LEVEL -20dB (NTSC)
..... -18dB (PAL)

Checking Method

- 1) Check that the playback signal level is the specified value.

2. Overall Level Characteristics Check

Mode	Camera recording and playback
Signal	400Hz, -60 dBs signal: XLR jack CH1 and CH2
Measurement Point	Audio CH1 or CH2 terminal of AUDIO jack
Measuring Instrument	Audio level meter
Specified Value	-10 ± 3.0 dBs

Menu setting:

A REF LEVEL -12dB

Checking Method

- 1) Input the 400Hz, -60dBs signal in the XLR jack.
- 2) Record in the camera mode.
- 3) Playback the recorded section.
- 4) Check that the 400Hz signal level is the specified value.

3. Overall Distortion Check

Mode	Camera recording and playback
Signal	400Hz, -60dBs signal: XLR jack CH1 and CH2
Measurement Point	Audio CH1 or CH2 terminal of AUDIO jack
Measuring Instrument	Audio distortion meter
Specified Value	Below 0.4% (200Hz to 6kHz BPF ON)

Menu setting:

A REF LEVEL -12dB

Checking Method

- 1) Input the 400Hz, -60dBs signal in the XLR jack.
- 2) Record in the camera mode.
- 3) Playback the recorded section.
- 4) Check that the distortion is the specified value.

4. Overall Noise Level Check

Mode	Camera recording and playback
Signal	No signal: Insert a shorting plug in the XLR jack
Measurement Point	Audio CH1 or CH2 terminal of AUDIO jack
Measuring Instrument	Audio level meter
Specified Value	Below -45dBs (IHF-A filter ON, 20kHz LPF ON)

Menu setting:

A REF LEVEL -12dB

Checking Method

- 1) Insert a shorting plug in the XLR jack.
- 2) Record in the camera mode.
- 3) Playback the recorded section.
- 4) Check that the noise level is the specified value.

5. Overall Separation Check

Mode	Camera recording and playback
Signal	400Hz, -60dBs signal: XLR jack <CH2> [CH1] (Insert a shorting plug in the XLR jack <CH1> [CH2])
Measurement Point	Audio <CH1> [CH2] terminal of AUDIO jack
Measuring Instrument	Audio level meter
Specified Value	Below -40dBs

<> : CH1 check

[] : CH2 channel check

Menu setting:

A REF LEVEL -12dB

Checking Method

- 1) Input the 400Hz, -60dBs signal in the <CH2> [CH1] terminal of the XLR jack only.
- 2) Record in the camera mode.
- 3) Playback the recorded section.
- 4) Check that the signal level of the audio <CH1> [CH2] terminal is the specified value.

5-4. SERVICE MODE

4-1. ADJUSTMENT REMOTE COMMANDER

The adjustment remote commander is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjustment remote commander performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Using the adjustment remote commander

- 1) Connect the adjustment remote commander to the LANC terminal.
- 2) Set the HOLD switch of the adjustment remote commander to "HOLD" (SERVICE position). If it has been properly connected, the LCD on the adjustment remote commander will display as shown in Fig. 5-4-1.

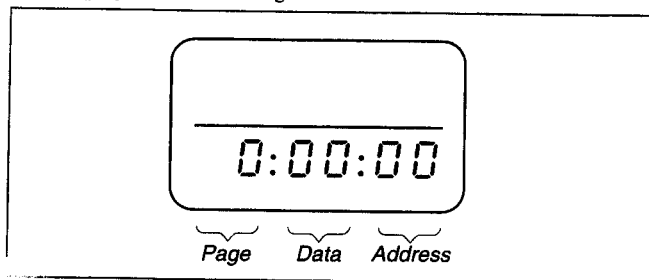


Fig. 5-4-1

- 3) Operate the adjustment remote commander as follows.

- Changing the page

The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH- button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD Display	0	1	2	3	4	5	6	7	8	9	A	b	c	d	e	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

- Changing the address

The address increases when the FF (▶▶) button is pressed, and decreases when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF.

- Changing the data (Data setting)

The data increases when the PLAY (▶) button is pressed, and decreases when the STOP (■) button is pressed. There are altogether 256 data, from 00 to FF.

- Writing the adjustment data

The PAUSE button must be pressed to write the adjustment data (B, C, D, F, 8 page) in the nonvolatile memory. (The new adjusting data will not be recorded in the nonvolatile memory if this step is not performed.)

- 4) After completing all adjustments, turn off the main power supply once.

2. Precautions upon using

the adjustment remote commander

Mishandling of the adjustment remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

4-2. DATA PROCESS

The calculation of the DDS display and the adjustment remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Indicates the hexadecimal-decimal conversion table.

Hexadecimal-decimal Conversion Table																②	
Upper digit of hexadecimal Lower digit of hexadecimal	0	1	2	3	4	5	6	7	8	9	A (H)	B (h)	C (c)	D (d)	E (E)	F (F)	
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	
4	64	65	66	67	68	69	70	71	72	73	74	77	76	77	78	79	
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	
A (H)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	
① B (h)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	

Note: The characters shown in the parenthesis () shown the display on the adjustment remote commander.

(Example) If the DDS display or the adjustment remote commander shows BD (b d);
Because the upper digit of the adjustment number is B (h), and the lower digit is D (d), the meeting point "189" of ① and ② in the above table is the corresponding decimal number.

Table. 5-4-1.

4-3. SERVICE MODE

1. Setting the Test Mode

Page D	Address 10
--------	------------

Data	Function
00	Normal
01	Forced camera power ON
02	Forced VTR power ON
03	Forced camera + VTR power ON
05	Forced memory power ON

- Before setting the data, select page: 0, address: 01, and set data: 01.
- For page D, the data set is recorded in the non-volatile memory by pressing the PAUSE button of the adjustment remote commander. In this case, take note that the test mode will not be exited even when the main power is turned off.
- After completing adjustments/repairs, be sure to return the data of this address to 00, and press the PAUSE button of the adjustment remote commander.
Select page: 0, address: 01, and set data: 00.

2. Emergence Memory Address

Page C	Address F4 to FF
--------	------------------

Address	Contents
F4	EMG code when first error occurs
F6	Upper: MSW code when shift starts when first error occurs Lower: MSW code when first error occurs
F7	Lower: MSW code to be moved when first error occurs
F8	EMG code when second error occurs
FA	Upper: MSW code when shift starts when second error occurs Lower: MSW code when second error occurs
FB	Lower: MSW code to be moved when second error occurs
FC	EMG code when last error occurs
FE	Upper: MSW code when shift starts when last error occurs Lower: MSW code when last error occurs
FF	Lower: MSW code to be moved when last error occurs

When no error occurs in this unit, data "00" is written in the above addresses (F4 to FF). when first error occurs in the unit, the data corresponding to the error is written in the first emergency address (F4 to F7). In the same way, when the second error occurs, the data corresponding to the error is written in the second emergency address (F8 to FB). Finally, when the last error occurs, the data corresponding to the error is written in the last emergency address (FC to FF).

Note: After completing adjustments, be sure to initialize the data of addresses F4 to FF to "00".

Initializing method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 3, address: 01, set data: 37, and press the PAUSE button.
- 3) Select page: 0, address: 01, and set data: 00.

2-1. EMG Code (Emergency Code)

Codes corresponding to the errors which occur are written in addresses F4, F8 and FC. The type of error indicated by the code are shown in the following table.

Code	Emergency Type
00	No error (Initial state)
10	Loading motor time-out during LOAD
11	Loading motor time-out during UNLOAD
19	MSW error
20	Reel slack
22	T reel error
23	S reel error
24	Reel table short
25	Reel motor error
30	Error during normal capstan rotation
40	FG error during drum start-up
42	FG error during normal drum rotation
50	False DEW detection
52	False wet DEW detection
70	Cassette compartment LOAD error
71	Cassette compartment UNLOAD error
72	Cassette compartment retry time-out during UNLOAD

2-2. MSW Code

MSW when errors occur:

Information on MSW (mode SW) when errors occur

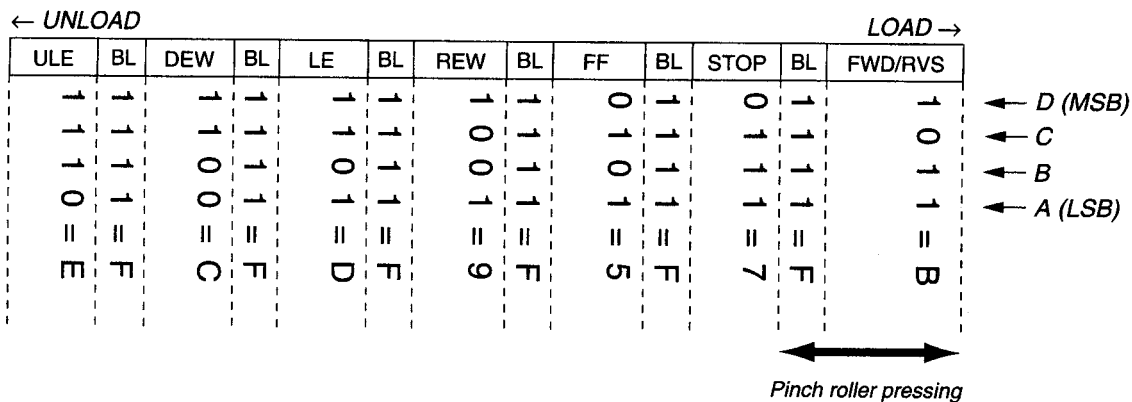
MSW when movement starts:

Information on MSW when movements starts when the mechanism position is moved (When the L motor is moved)

MSW of target of movement:

Information on target MSW of movement when the mechanism position is moved

Mechanical Position

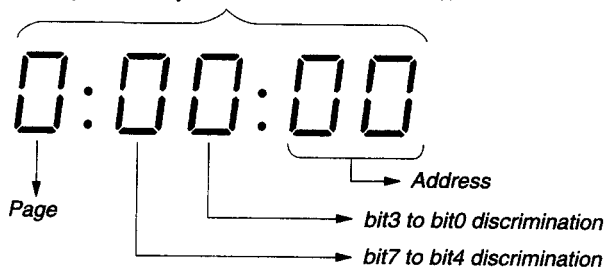


Position	Code	Contents
ULE	E	UNLOAD completion position. When the cassette is ejected, the mechanism will stop at this position. Cassette IN standby. The guide will start protruding out as the mechanism moves towards the LOAD position.
BL	F	BLANK code, at the boundary between codes. The mechanism will not stop at this code during operations. (Excluding LOAD/UNLOAD)
DEW	C	Code during loading
LE	D	Tape guide LOAD completion position.
REW	9	REW position. The pinch roller is released.
FF	5	FF position. The pinch roller is released.
STOP	7	Stop position. The pinch roller is released and tension regulator returns, and the brake is imposed on both reels.
FWD/RVS	B	PB, REC, CUE, REVIEW, PAUSE positions. The pinch roller is pressed, and the tension regulator is ON. The mechanism is operating at this position in modes in which normal images are shown.
NULL	0	Code not existing in the MD. When errors occur when the loading motor is not driving, this code is memorized.

3. Bit value discrimination

Bit values must be discriminated using the display data of the adjustment remote commander for following items. Use the table below to discriminate if the bit value is "1" or "0".

Display on the adjustment remote commander



Display on the adjustment remote commander	Bit values			
	bit3 or bit7	bit2 or bit6	bit1 or bit5	bit0 or bit4
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
Ⓐ 8	1	0	0	0
9	1	0	0	1
A (H)	1	0	1	0
B (b)	1	0	1	1
C (c)	1	1	0	0
D (d)	1	1	0	1
Ⓑ E (E)	1	1	1	0
F (F)	1	1	1	1

Example: If "8E" is displayed on the adjustment remote commander, the bit values for bit7 to bit4 are shown in the Ⓐ column, and the bit values for bit3 to bit0 are shown in the Ⓑ column.

4. Switch check (1)

Page 2	Address 43
--------	------------

Bit	Function	When bit value=1	When bit value=0
0	VTR MODE SW (PM-040 board S081)	OFF	ON
1	CAMERA MODE SW (PM-040 board S081)	OFF	ON
2	START/STOP SW (FS-082 board S402, CF-1044 block S432)	OFF	ON
3	EJECT SW (EJ-034 board S291)	OFF	ON
4	CC DOWN SW (Mechanism chassis)	OFF (UP)	ON (DOWN)
5	PHOTO FREEZE SW (CF-1044 block S431)	OFF	ON
6	MEMORY MODE SW (PM-040 board S081)	OFF	ON
7			

Using method:

- 1) Select page: 2, address: 43.
- 2) By discriminating the bit value of display data, the state of the switch can be discriminated.

5. Switch check (2)

Page 2	Address 5F to 67
--------	------------------

Using method:

- 1) Select page: 2, address: 5F to 67.
- 2) By discriminating the display data, the pressed key can be discriminated.

Address	Data						
	00 (00 to 0A)	19 (0B to 24)	32 (25 to 44)	59 (45 to 6E)	85 (6F to 9F)	B8 (A0 to D4)	EE (D5 to FF)
5F (KEY AD8) (IC1104 ㉘)	CUSTOM PRESET (AE-023 board) (S044)	MENU (AE-023 board) (S044)	AE SHIFT (AE-023 board) (S045)			PRESET 3200 (AE-023 board) (S043)	PRESET 5800 (AE-023 board) (S043)
60 (KEY AD0) (IC1104 ㉙)	STOP (KY-049 board) (S261)	REW (KY-049 board) (S263)	PLAY (KY-049 board) (S265)	REC (KY-049 board) (S267,269)	EDIT + (LL-010 board) (S472)	EDIT - (LL-010 board) (S471)	No key input
61 (KEY AD1) (IC1104 ㉚)	PAUSE (KY-049 board) (S262)	FF (KY-049 board) (S264)	SLOW (KY-049 board) (S266)	AUDIO DUB (KY-049 board) (S268)	FRAME + (KY-049 board) (S270)	FRAME - (KY-049 board) (S271)	No key input
62 (KEY AD2) (IC1104 ㉛)	PHOTO (PHOTO REC) (CF-1044 block) (S431)				FOCUS INFINITY (FC-074 board) (S222)	FOCUS AUTO (FC-074 board) (S222, 221)	FOCUS MANUAL (FC-074 board) (S222)
63 (KEY AD3) (IC1104 ㉜)	MEMORY MIX (SW-343 board) (S507)	DATA CODE (SW-343 board) (S510)	END SEARCH (SW-343 board) (S513)	TITLE (SW-343 board) (S512)	DIGITAL EFFECT (SW-343 board) (S517)	AUTO MODE ON (SB-036 board) (S063)	AUTO MODE OFF (SB-036 board) (S063)
64 (KEY AD4) (IC1104 ㉝)	BACK LIGHT (SB-036 board) (S068)	SPOT LIGHT (SB-036 board) (S067)	AUDIO LEVEL DISPLAY (SB-036 board) (S065)	DISPLAY (SB-036 board) (S066)	ZEBRA 100% (SB-036 board) (S061)	ZEBRA OFF (SB-036 board) (S061)	ZEBRA 70% (SB-036 board) (S061)
65 (KEY AD5) (IC1104 ㉞)	EXCUTE (KP-011 board) (S121)			LCD BRIGHT + (SW-343 board) (S518)	LCD BRIGHT - (SW-343 board) (S519)	PANEL CLOSE (FP-241)	PANEL OPEN (FP-241)
66 (KEY AD6) (IC1104 ㉟)	MEMORY INDEX (SW-343 board) (S508)	MEMORY + (SW-343 board) (S509)	MEMORY - (SW-343 board) (S512)	MEMORY DELETE (SW-343 board) (S514)	MEMORY PLAY (SW-343 board) (S516)	PANEL REVERSE (FP-241)	PANEL NORMAL (FP-241)
67 (KEY AD7) (IC1104 ㊱)		WHITE BALANCE (FS-082 board) (S404)		INDEX (FS-082 board) (S403)	FADER (FS-082 board) (S405)	SHUTTER ON (FS-082 board) (S401)	SHUTTER OFF (FS-082 board) (S401)

6. Record of Use check

Note: When replacing the drum assembly, initialize the data of address: A2 to AA.

Page 2	Address A2 to AA
--------	------------------

Address	Function		Remarks
A2	Drum rotation counted time (BCD code)	Minutes	
A3		Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
A4		Hour (H)	1000th place digit and 100th place digit of counted time (decimal digit)
A5	User initial power on date (BCD code)	Year	After setting the clock, set the date of power on next.
A6		Month	
A7		Day	
A8	Final condensation occurrence date (BCD code)	Year	
A9		Month	
AA		Day	

Using method:

- 1) The record of use data is displayed at page: 2, addresses: A2 to AA.
Note: This data will be erased (reset) when the cabinet (R) assembly (SW-343 board) is removed.

Initializing method:

- 1) Using the adjustment remote commander, select the object address and set data: 00.

7. Record of Self-diagnosis check

Page 2	Address B0 to C6
--------	------------------

Address	Self-diagnosis code
B0	"Repaired by" code (Occurred 1st time) *1
B1	"Block function" code (Occurred 1st time)
B2	"Detailed" code (Occurred 1st time)
B4	"Repaired by" code (Occurred 2nd time) *1
B5	"Block function" code (Occurred 2nd time)
B6	"Detailed" code (Occurred 2nd time)
B8	"Repaired by" code (Occurred 3rd time) *1
B9	"Block function" code (Occurred 3rd time)
BA	"Detailed" code (Occurred 3rd time)
BC	"Repaired by" code (Occurred 4th time) *1
BD	"Block function" code (Occurred 4th time)
BE	"Detailed" code (Occurred 4th time)
C0	"Repaired by" code (Occurred 5th time) *1
C1	"Block function" code (Occurred 5th time)
C2	"Detailed" code (Occurred 5th time)
C4	"Repaired by" code (Occurred the last time) *1
C5	"Block function" code (Occurred the last time)
C6	"Detailed" code (Occurred the last time)

*1 : "01" → "C", "03" → "E"

Using method:

- 1) The past self-diagnosis codes are displayed at page: 2, addresses: BC to C6. Refer to "SELF-DIAGNOSIS FUNCTION" for detail of the self-diagnosis code.

Note: This data will be erased (reset) when the cabinet (R) assy (SW-343 board) is removed.

8. HRS METER (Hours meter)

The data of "HRS METER" of the menu are memorized in addresses 00 to 13 of page A. (VI-156 board IC1105 (EEPROM)). When replacing the drum assy. capstan motor or mechanism deck, reset the data of the addresses corresponding to the replaced parts to "00".

Note: Same data is memorised in two addresses, so be sure to reset both addresses.

Page A	Address 00 to 13
--------	------------------

Address	Name	Contents
00	OPERATION (L)	Power supply operation counted time (Lower digits)
01	OPERATION (H)	Power supply operation counted time (Upper digits)
02	DRUM RUN (L)	Drum rotation counted time (Lower digits)
03	DRUM RUN (H)	Drum rotation counted time (Upper digits)
04	TAPE RUN (L)	Capstan rotation counted time (Lower digits)
05	TAPE RUN (H)	Capstan rotation counted time (Upper digits)
06	THREADING (L)	Unloading counter (Lower digits)
07	THREADING (H)	Unloading counter (Upper digits)
08	CHECK SUM (L)	Check sum (Lower digits)
09	CHECK SUM (H)	Check sum (Upper digits)
0A	OPERATION (L)	Power supply operation counted time (Lower digits)
0B	OPERATION (H)	Power supply operation counted time (Upper digits)
0C	DRUM RUN (L)	Drum rotation counted time (Lower digits)
0D	DRUM RUN (H)	Drum rotation counted time (Upper digits)
0E	TAPE RUN (L)	Capstan rotation counted time (Lower digits)
0F	TAPE RUN (H)	Capstan rotation counted time (Upper digits)
10	THREADING (L)	Unloading counter (Lower digits)
11	THREADING (H)	Unloading counter (Upper digits)
12	CHECK SUM (L)	Check sum (Lower digits)
13	CHECK SUM (H)	Check sum (Upper digits)

Resetting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select the addresses indicated by ● in the following table corresponding to the replaced parts, and input data: 00.

Note: Press the PAUSE button of the adjustment remote commander each time to set the data.

Replaced parts	Address		
	02, 03, 0C, 0D (DRUM RUN)	04, 05, 0E, 0F (TAPE RUN)	06, 07, 10, 11 (THREADING)
Mechanism deck	●	●	●
Drum assy	●		
Capstan motor		●	

- 3) Select page: 0, address: 01, and set data: 00.

HRS METER data re-writing procedure

When a user forgets a password, replace IC1105 (EEPROM) on VI-156 board. At this time, replace IC1105 in the following order to copy the HRS METER data.

Processing before replacing IC1105:

- 1) Note down the data of page: A, address: 00 to 13.

Processing after replacing IC1105 :

- 1) Select page: 0, address: 01, set data: 01.
- 2) Select page: A, address: 00 to 13, and input the data noted down.
Note: Press the PAUSE button of the adjustment remote commander each time to set the data.
- 3) Select page: 0, address: 01, set data: 00.

SECTION 6 REPAIR PARTS LIST

DSR-250/2501

6-1. EXPLODED VIEWS

NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

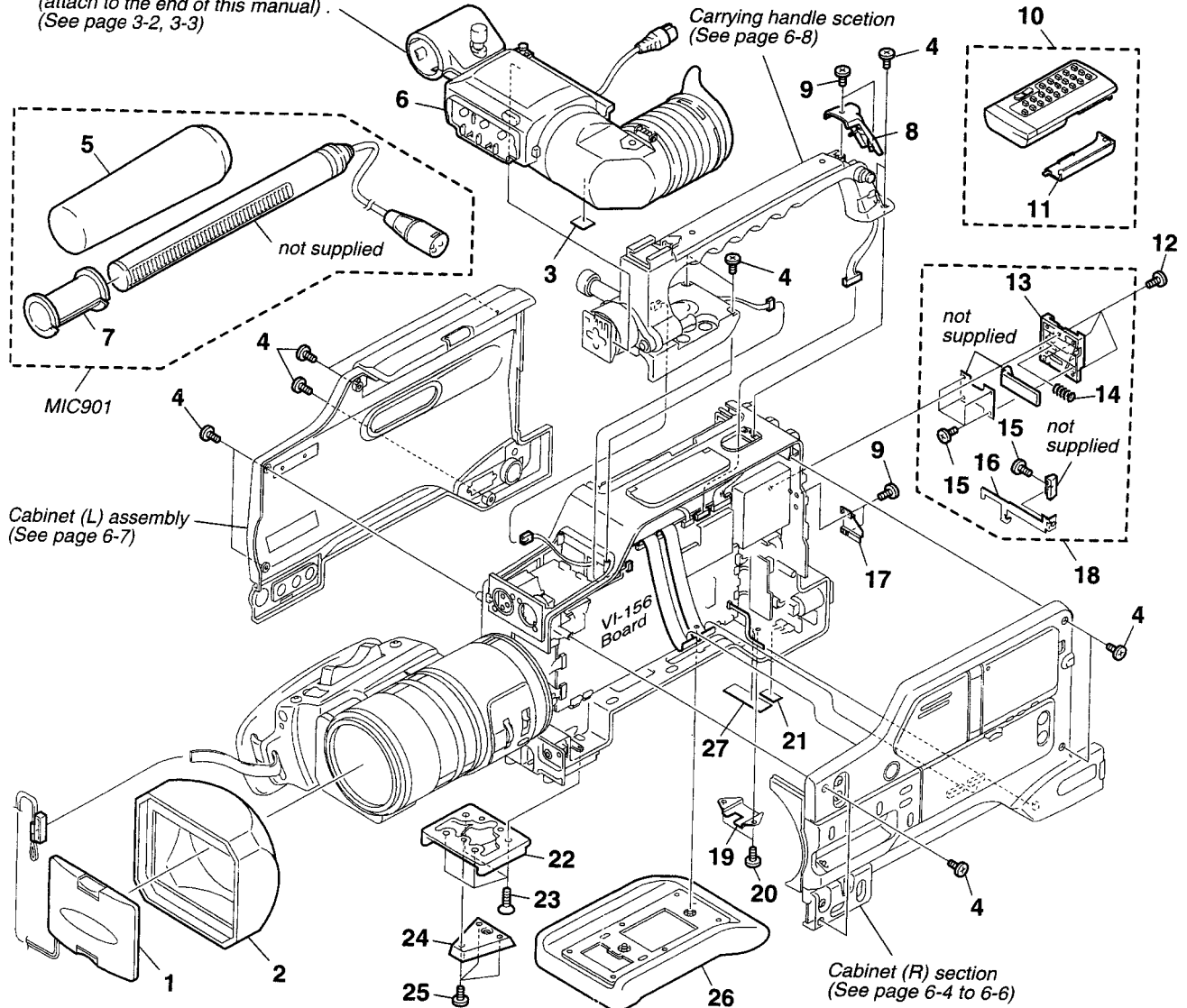
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

6-1-1. OVERALL SECTION-1

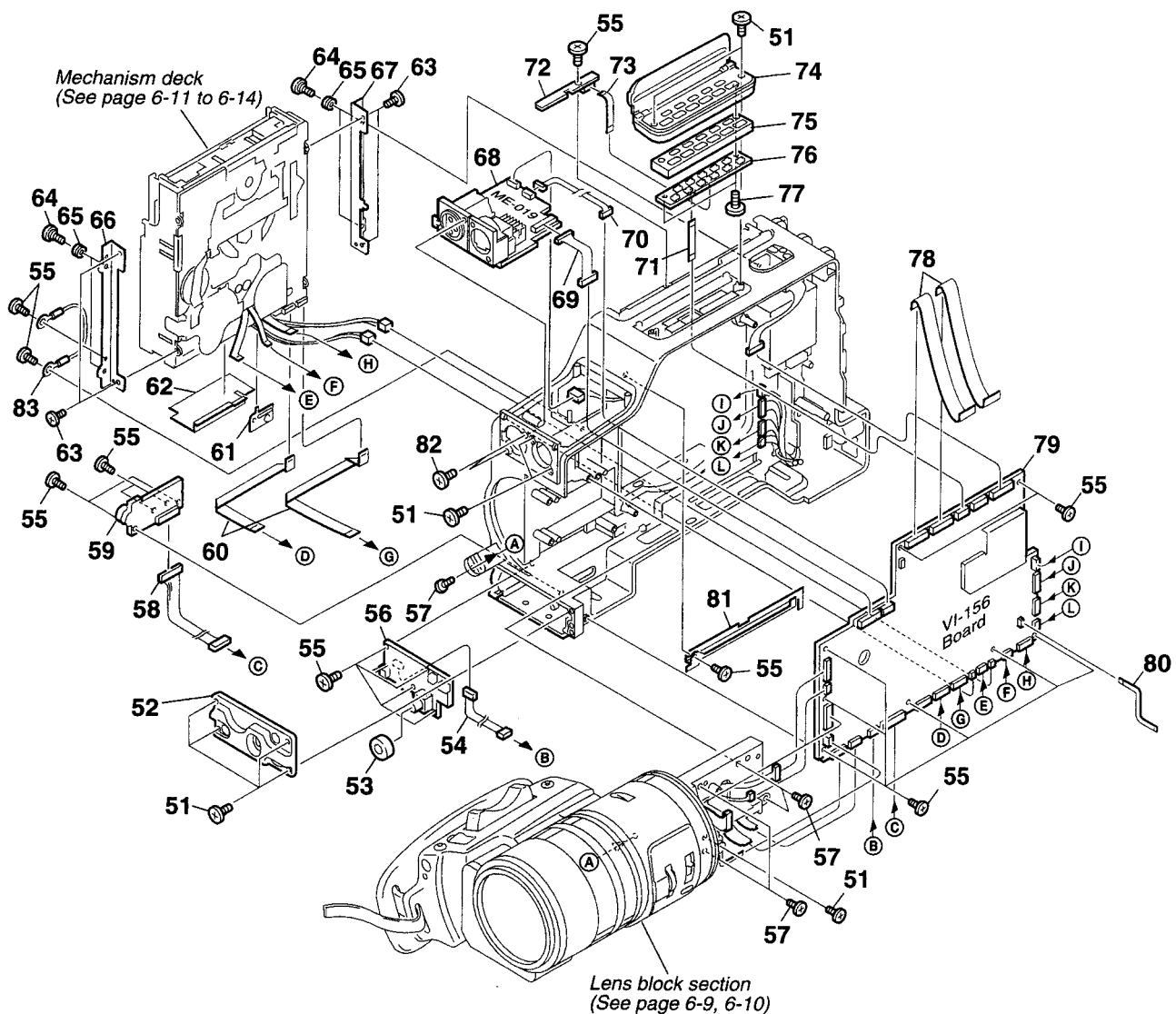
VF block assembly

Refer to the separate DXF-801/810CE Service Manual
(attach to the end of this manual).
(See page 3-2, 3-3)



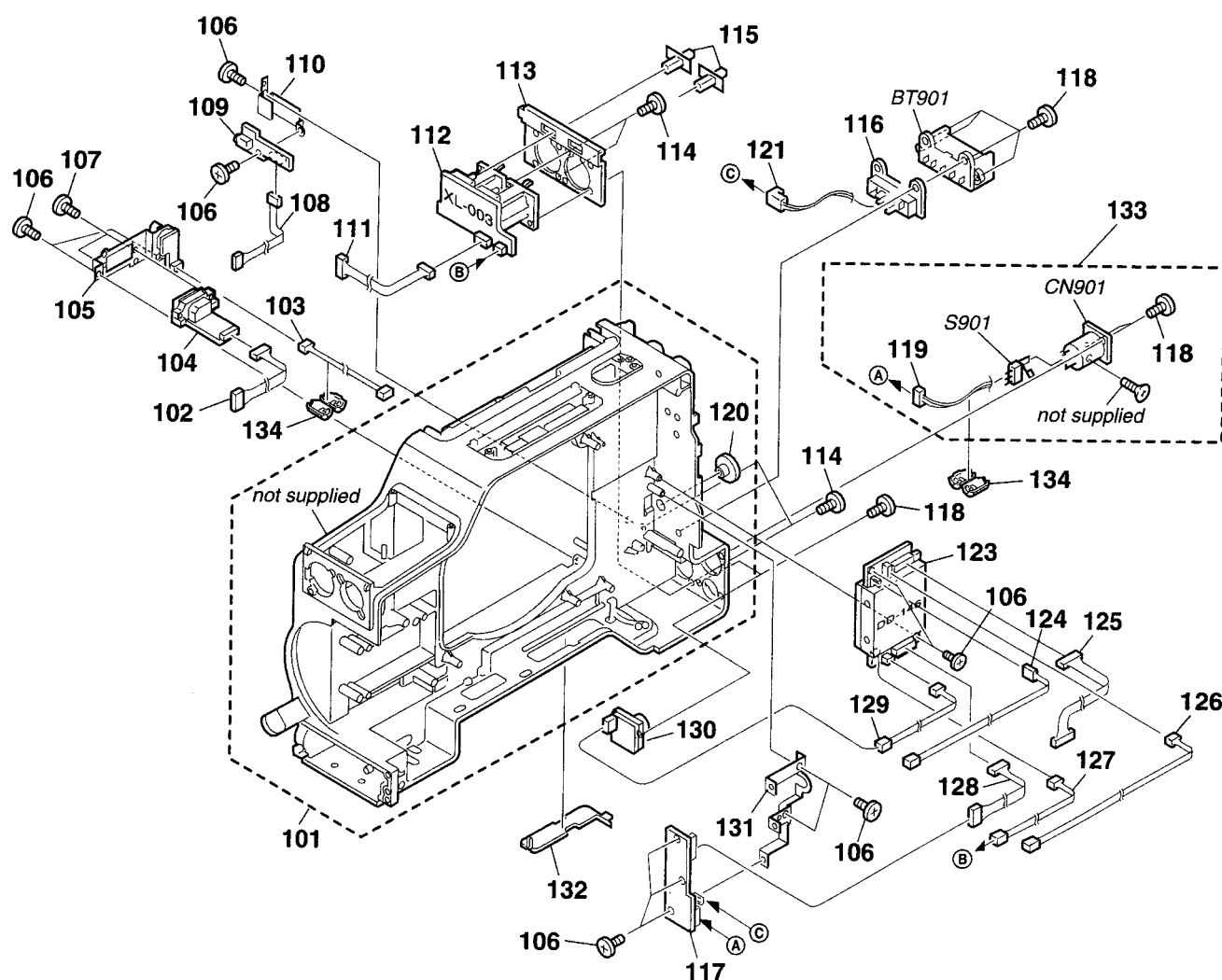
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
1	X-3950-568-2	CAP ASSY, HOOD		15	7-627-553-38	SCREW, PRECISION +P M2X3	
2	X-3950-937-1	HOOD ASSY, LENS		* 16	3-679-688-02	LEVER, RELEASE	
3	3-703-848-01	LABEL (N), SUB CAUTION (250)		17	3-063-720-01	RETAINER, B LEVER	
4	7-682-548-09	SCREW +B M3X8		18	A-7096-320-A	MOUNT ASSY, V	
5	3-048-481-01	SCREEN, WINDOW		* 19	3-971-072-01	STOPPER	
6	A-8279-329-A	VF ASSY (250)		20	3-061-062-01	BOLT (M2.6), SPRING	
6	A-8326-150-A	VF ASSY (250P)		* 21	3-704-367-01	LABEL (250)	
7	3-179-882-01	SPACER, MICROPHONE		* 22	3-716-391-01	WEDGE, MOUNTING	
8	X-3950-953-1	COVER ASSY, HANDLE (REAR)		23	3-063-723-01	+K M4X8 (EG GRIP)	
9	3-968-729-91	SCREW (M2), LOCK ACE, P2		* 24	3-612-631-01	SHOE (S), CAMERA	
10	1-475-950-21	REMOTE COMMANDER (RMT-811)		25	7-682-160-09	SCREW +P M4X6	
11	3-053-056-01	LID, BATTERY CASE (FOR RMT-811)		26	X-3950-907-1	PAD ASSY, SHOULDER	
12	3-063-724-01	+B M3X6 (EG GRIP)		27	3-703-845-01	LABEL (N) (U/C), MAIN CAUTION (250)	
* 13	3-679-690-02	MOUNT, V		MIC901	8-814-298-90	MICROPHONE (ECM-NV1)	
* 14	3-679-648-02	SPRING, COMPRESSION					

6-1-2. OVERALL SECTION-2



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
51	3-968-729-91	SCREW (M2), LOCK ACE, P2		67	3-063-700-01	BRACKET (R), MD	
52	X-3950-929-1	CABINET ASSY, FRONT LOWER		68	A-7074-553-A	ME-019 BOARD, COMPLETE	
53	3-612-604-01	KNOB, VR (AUDIO)		69	1-960-783-11	HARNESS (VM-068) 12P	
54	1-960-776-11	HARNESS (FV-120) 6P		70	1-960-784-11	HARNESS (MV-124) 7P	
55	3-968-729-51	SCREW (M2), LOCK ACE, P2		71	1-757-148-11	FVK-001 FLEXIBLE FLAT CABLE 8P	
56	A-7074-556-A	FS-082 BOARD, COMPLETE		72	A-7074-554-A	EJ-034 BOARD, COMPLETE	
57	7-682-548-09	SCREW +B M3X8		73	1-757-150-11	FKE-001 FLEXIBLE FLAT CABLE 6P	
58	1-960-777-11	HARNESS (VJ-107) 14P (250)		74	X-3950-948-1	FRAME ASSY, VTR KEY	
58	1-960-777-21	HARNESS (VJ-107) 14P (250P)		75	3-063-711-01	KEY, VTR	
59	A-7074-555-A	JK-197 BOARD, COMPLETE		76	A-7074-545-A	KY-049 BOARD, COMPLETE	
60	1-757-151-11	FRV-008 FLEXIBLE FLAT CABLE 21P		77	3-948-339-61	TAPPING	
61	3-063-789-01	RETAINER (A), FLEXIBLE		78	1-757-147-11	FVS-001 FLEXIBLE FLAT CABLE 30P	
62	3-063-790-01	RETAINER (B), FLEXIBLE		79	A-7096-400-A	VI-156 BOARD, COMPLETE (SERVICE)	
63	7-685-851-04	SCREW +BVTT M2X4 (S)		80	1-679-395-11	FP-245 FLEXIBLE BOARD 10P	
64	3-974-010-01	SCREW (M3), STEP		* 81	3-063-550-01	PLATE, HARNESS GUIDE	
65	3-974-011-01	RUBBER, VIBRATION PROOF		82	3-061-062-01	BOLT (M2.6), SPRING	
66	3-063-699-01	BRACKET (L), MD		83	1-960-908-11	HARNESS (JJ-059)	

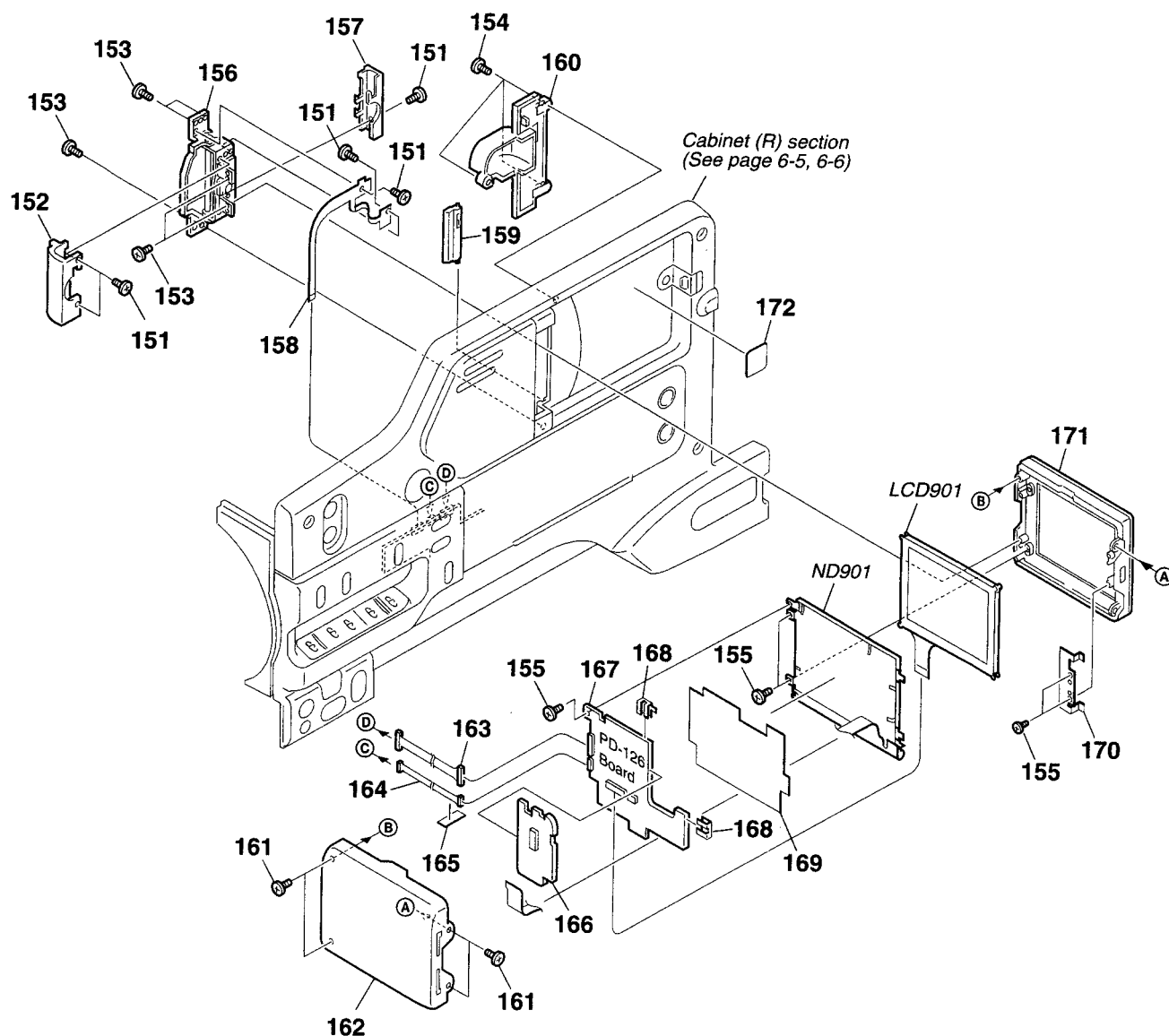
6-1-3. OVERALL SECTION-3



Ref. No.	Part No.	Description
101	X-3950-947-A	FRAME ASSY, CENTER
102	1-960-794-11	HARNESS (IL-053) 6P
103	1-960-780-11	HARNESS (VV-114) 3P
104	A-7074-550-A	DV-031 BOARD, COMPLETE
105	A-7074-557-A	VO-012 BOARD, COMPLETE
106	3-968-729-51	SCREW (M2), LOCK ACE, P2
107	3-968-729-91	SCREW (M2), LOCK ACE, P2
108	1-960-779-11	HARNESS (VR-128) 5P
109	A-7074-549-A	RL-057 BOARD, COMPLETE
* 110	3-063-708-01	BRACKET (LANC)
111	1-960-781-11	HARNESS (VX-050) 8P
112	A-7074-551-A	XL-003 BOARD, COMPLETE
* 113	3-063-709-01	BRACKET (XLR)
114	7-682-548-09	SCREW +B M3X8
115	3-063-710-01	KNOB (AU), SLIDE
116	3-063-361-01	SPACER, TERMINAL
117	A-7074-548-A	IN-057 BOARD, COMPLETE
118	3-061-062-01	BOLT (M2.6), SPRING

Ref. No.	Part No.	Description	Remarks
119	1-960-796-11	HARNESS (ID-052) 6P	
120	3-717-821-01	CAP, BREAKER	
121	1-960-795-11	HARNESS (IB-053) 2P	
122	A-7074-546-A	DD-146 BOARD, COMPLETE	
123	1-960-790-11	HARNESS (DV-063) 2P	
124			
125	1-960-778-11	HARNESS (VD-053) 12P	
126	1-960-789-11	HARNESS (DM-141) 4P	
127	1-960-786-11	HARNESS (DX-050) 3P	
128	1-960-787-11	HARNESS (DI-065) 9P	
129	1-960-788-11	HARNESS (DD-064) 2P	
130	A-7074-552-A	DC-095 BOARD, COMPLETE	
* 131	3-063-701-01	BRACKET (BREAKER)	
132	3-063-719-01	LID, BLIND	
133	1-960-957-11	HARNESS (DC-069)	
134	1-500-249-11	FERRITE BEAD (CASE)(250P)	
BT901	1-766-377-12	CONNECTOR, BATTERY	
CN901	1-564-603-31	CONNECTOR (WITH DC SW) 4P	
S901	1-553-442-21	SWITCH, MICRO	

6-1-4. CABINET (R) SECTION-1



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
151	3-989-735-91	SCREW (M1.7), LOCK ACE, P2		163	1-960-798-11	HARNESS (PS-111) 14P	
152	3-063-693-01	COVER (FRONT), HINGE		164	1-960-797-11	HARNESS (PS-110) 8P	
153	3-968-729-71	SCREW (M2), LOCK ACE, P2		165	3-060-795-01	TAPE, HARNESS FIXED	
154	3-968-729-51	SCREW (M2), LOCK ACE, P2		△ 166	1-418-876-11	TRANSFORMER UNIT, INVERTER	
155	3-989-735-11	SCREW (M1.7), LOCK ACE, P2		167	A-7096-158-A	PD-126 BOARD, COMPLETE	
156	X-3950-938-1	HINGE ASSY		* 168	3-051-232-01	CLIP, PCB	
157	3-060-694-11	COVER (REAR), HINGE		169	3-060-704-01	SHEET (N), BL SHIELD	
158	1-679-392-21	FP-241 FLEXIBLE BOARD 6P		* 170	3-063-695-01	RETAINER, BL	
159	X-3949-119-1	PLATE ASSY, BLIND		171	X-3950-939-1	CABINET (M) ASSY, P	
* 160	3-063-694-01	LID, HINGE		172	3-703-848-01	LABEL (N), SUB CAUTION (250)	
161	3-968-729-91	SCREW (M2), LOCK ACE P2		LCD901	8-753-050-52	ACX300CK-J	
162	3-063-692-01	CABINET (C), P (250)		△ ND901	1-517-931-11	TUBE, FLUORESCENT, COLD CATHODE (2.5)	
162	3-063-692-11	CABINET (C), P (250P)					

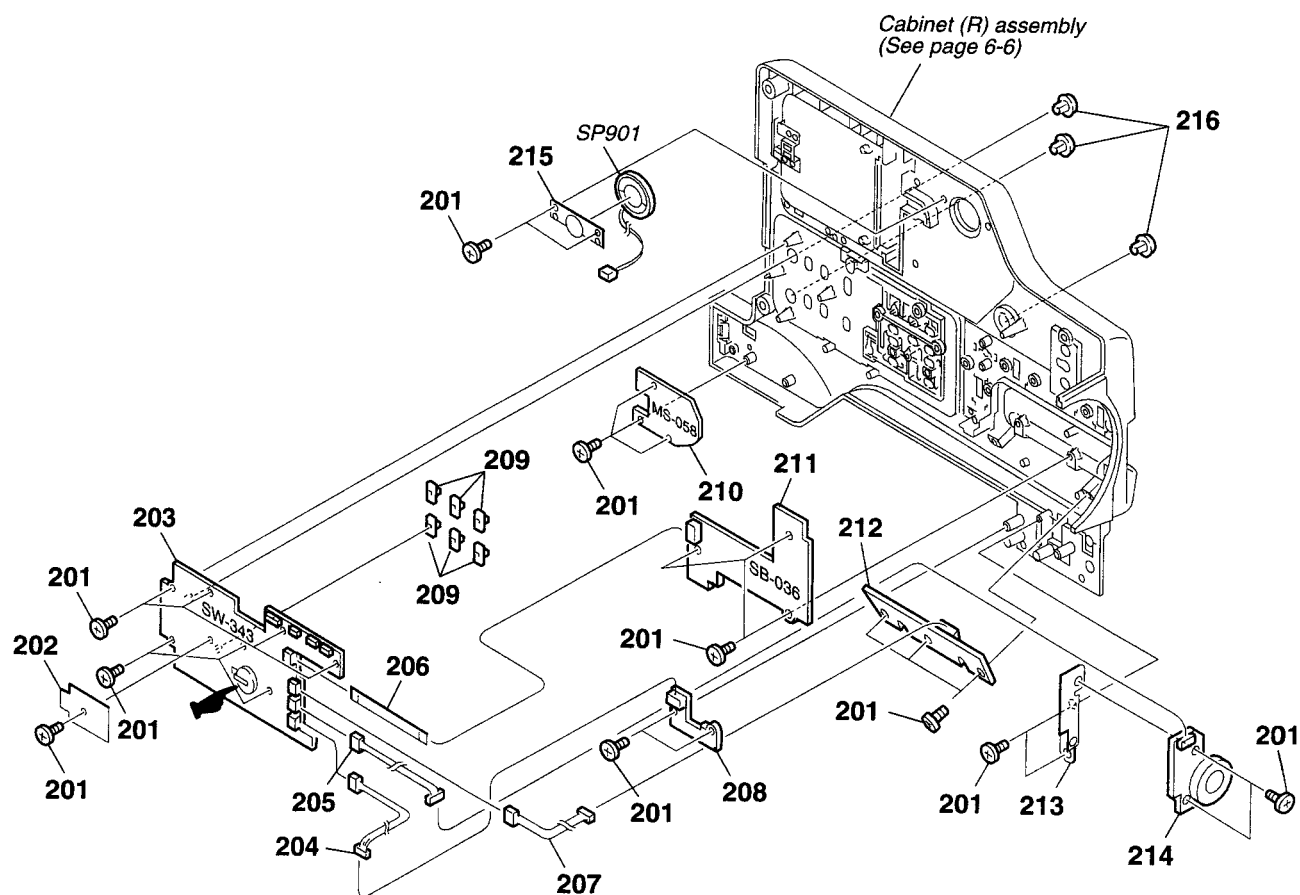
Note :

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Note :

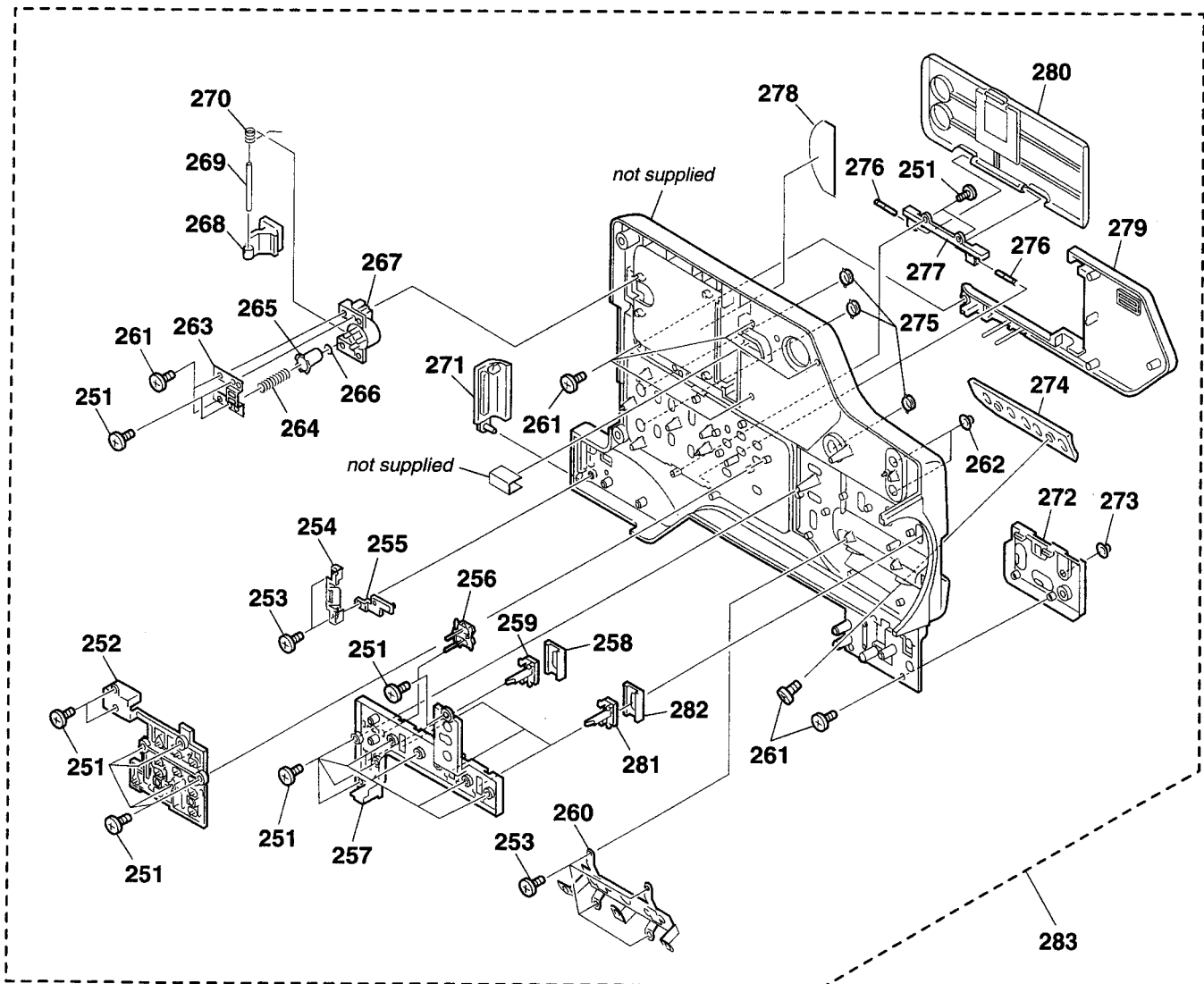
Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

6-1-5. CABINET (R) SECTION-2



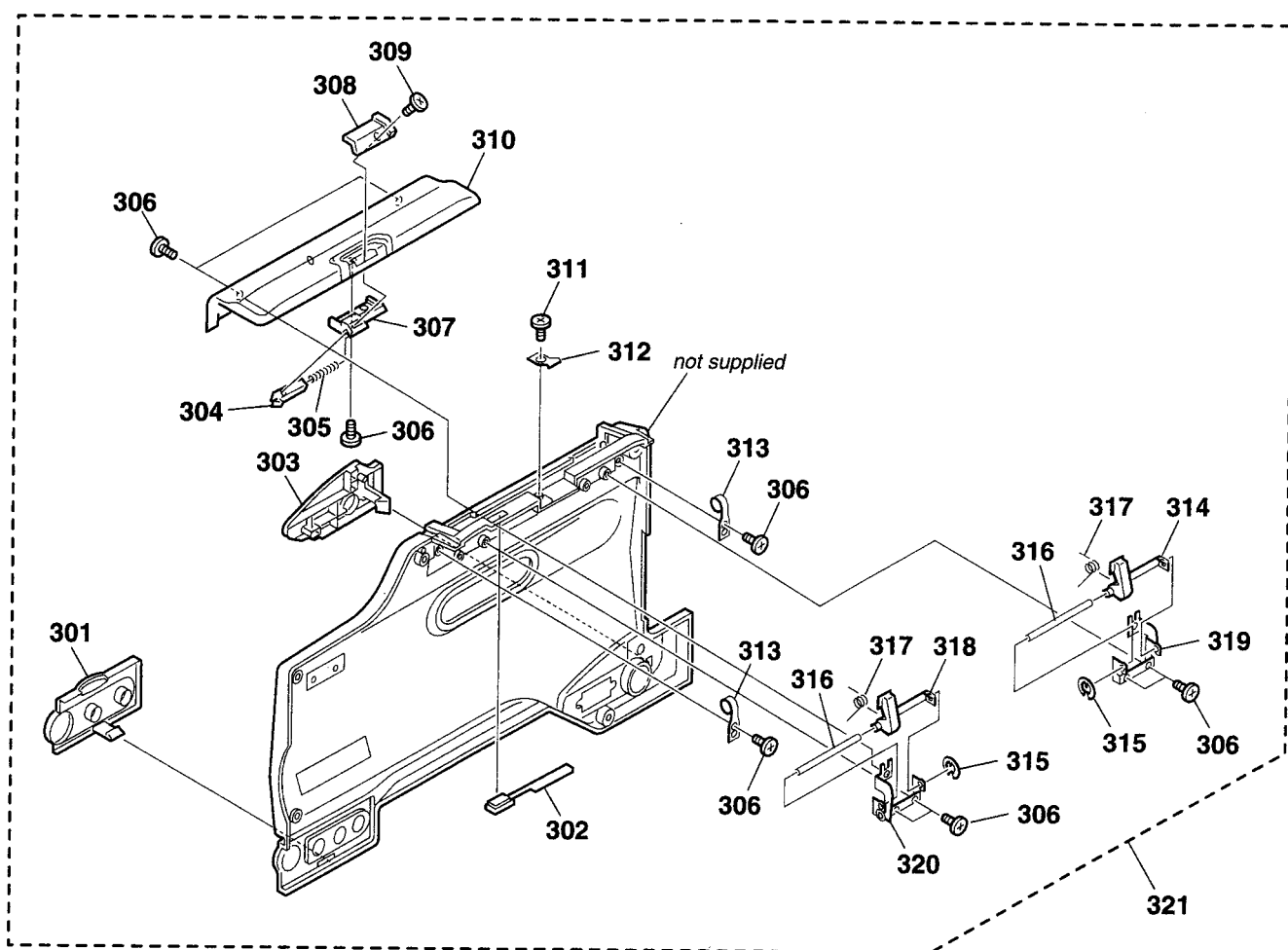
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
201	3-968-729-51	SCREW (M2), LOCK ACE, P2		210	A-7074-539-A	MS-058 BOARD, COMPLETE	
* 202	3-063-994-01	SHEET, SW PROTECTION		211	A-7074-536-A	SB-036 BOARD, COMPLETE	
203	A-7074-535-A	SW-343 BOARD, COMPLETE		212	A-7074-537-A	AE-023 BOARD, COMPLETE	
204	1-960-793-11	HARNESS (SP-167) 4P		* 213	3-063-698-01	FRAME, KP	
205	1-960-791-11	HARNESS (SK-101) 5P		214	A-7074-538-A	KP-011 BOARD, COMPLETE	
206	1-757-149-11	FSS-004 FLEXIBLE FLAT CABLE 7P		* 215	X-3950-957-1	RETAINER ASSY, SP	
207	1-960-792-11	HARNESS (SA-105) 6P		216	3-063-593-01	KNOB, VR	
208	A-7074-540-A	PM-040 BOARD, COMPLETE		SP901	1-529-590-11	SPEAKER (2.0CM)	
209	3-063-696-01	KNOB (A), SLIDE					

6-1-6 CABINET (R) SECTION-3



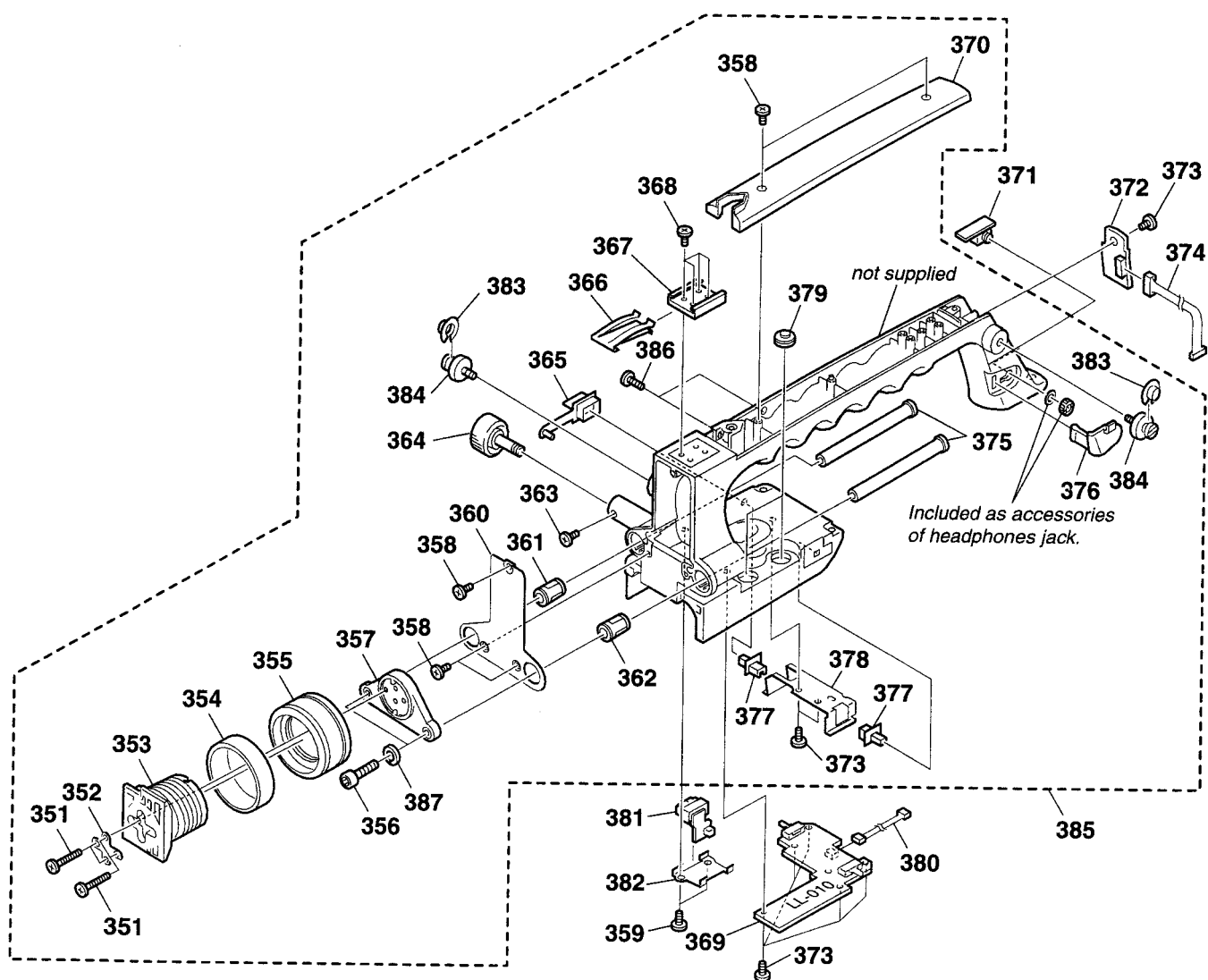
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
251	3-968-729-91	SCREW (M2), LOCK ACE, P2		268	3-063-579-01	KNOB, PANEL LOCK	
252	3-063-590-01	BUTTON, MS		269	3-055-248-01	SHAFT, PANEL LOCK	
253	3-968-729-51	SCREW (M2), LOCK ACE, P2		* 270	3-063-721-01	SPRING, PANEL LOCK	
254	3-063-599-01	SPRING, MS		271	3-063-585-01	COVER, MS	
* 255	3-063-600-01	LIGHT, MS TALLY GUIDE		272	3-063-583-01	CABINET, POWER	
256	3-063-605-01	BUTTON, DA		273	3-064-679-01	COVER (L STROKE), SW	
* 257	3-063-591-01	RETAINER (A), KNOB		274	3-063-586-01	CABINET, AE	
* 258	3-063-592-01	COVER (A), HOLE		* 275	3-063-606-01	GUIDE, VR	
259	3-063-587-01	KNOB (B), SLIDE		276	3-063-597-01	SHAFT, SW	
* 260	3-063-697-01	FRAME, AE		277	3-063-805-01	RETAINER (B), SW SHAFT	
261	3-948-339-61	TAPPING		278	3-063-601-01	SHEET, PROTECTION	
262	3-676-244-03	COVER, SWITCH		279	X-3950-931-1	CABINET ASSY, SP	
* 263	3-063-580-01	BRACKET, PANEL LOCK		280	X-3950-932-1	LID ASSY, SW	
264	3-060-633-01	SPRING, COMPRESSION		281	3-063-589-01	KNOB (C), SLIDE	
265	3-060-632-21	UP, PANEL (POP)		* 282	3-063-602-01	COVER (B), HOLE	
266	3-060-641-01	PAD, PANEL (POP) UP		283	X-3950-940-1	CABINET (R) ASSY	
* 267	3-063-578-01	BASE, PANEL LOCK					

6-1-7. CABINET (L) ASSEMBLY



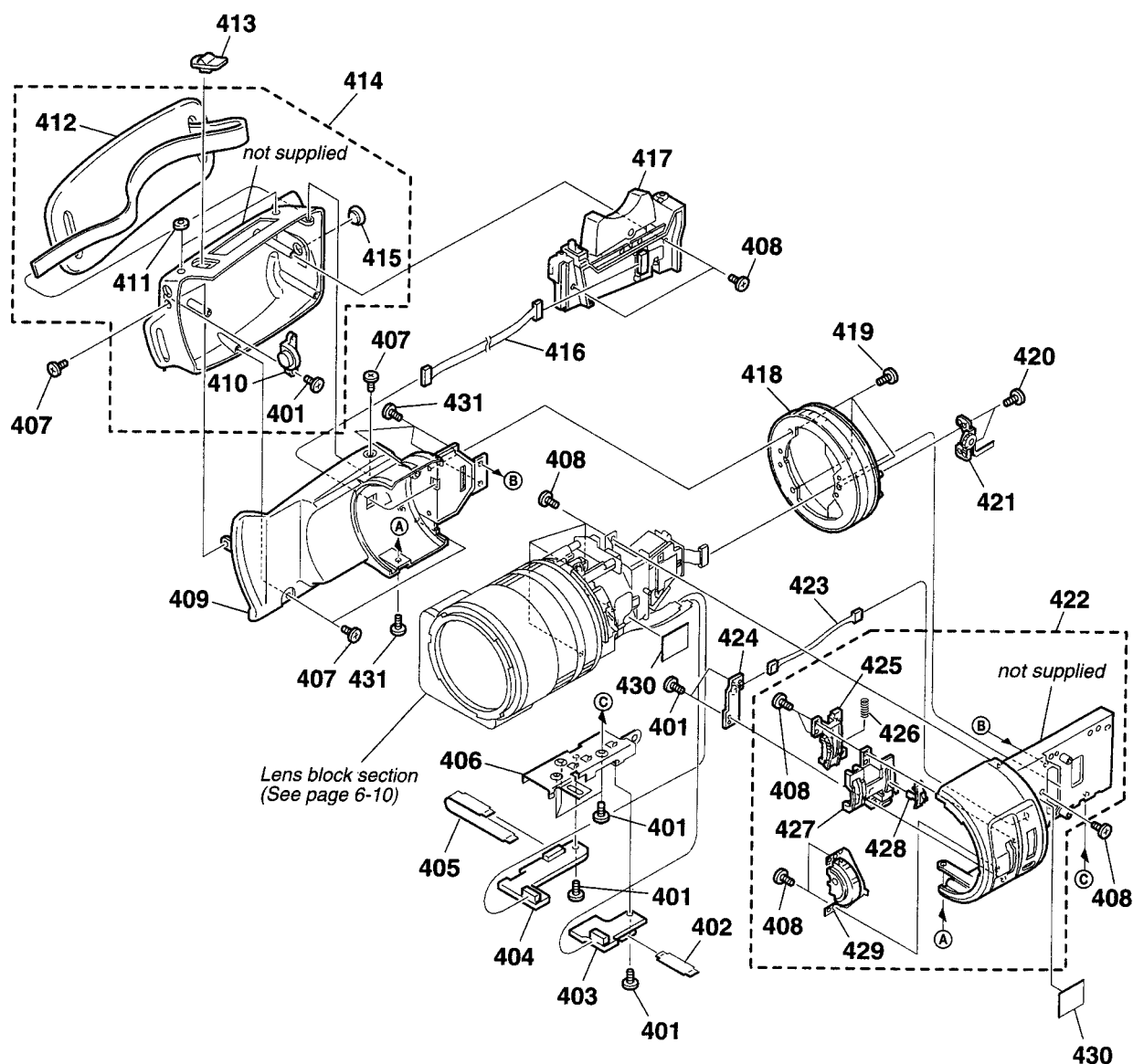
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
301	3-063-527-01	COVER (AV), JACK		312	3-063-530-01	LOCK, CC	
302	3-063-535-01	KEY, EJECT		313	3-063-531-01	SPRING, CC LEAF	
303	3-063-526-01	COVER (DV), JACK		* 314	3-063-524-01	GUIDE (R), CASSETTE	
304	3-063-528-01	SLIDER, CC		315	7-624-101-04	STOP RING 1.2 (E TYPE)	
305	3-063-604-01	SPRING (SW), COMPRESSION COIL		316	3-063-534-01	SHAFT, CG	
306	3-968-729-91	SCREW (M2), LOCK ACE, P2		* 317	3-063-532-01	SPRING, CC TORSION COIL	
307	3-063-529-01	BASE, CC SLIDER		* 318	3-063-536-01	GUIDE (L), CASSETTE	
308	3-063-533-01	KNOB, CC		319	X-3950-927-1	FRAME (R) ASSY, CC	
309	3-713-791-31	SCREW (M1.7X6), TAPPING, P2		320	X-3950-928-1	FRAME (L) ASSY, CC	
310	3-063-523-01	COVER, CASSETTE		321	X-3950-959-1	CABINET (L) ASSY (250)	
311	3-968-729-81	SCREW (M2), LOCK ACE, P2		321	X-3951-182-1	CABINET (L) ASSY (250P)	

6-1-8. CARRYING HANDLE SECTION



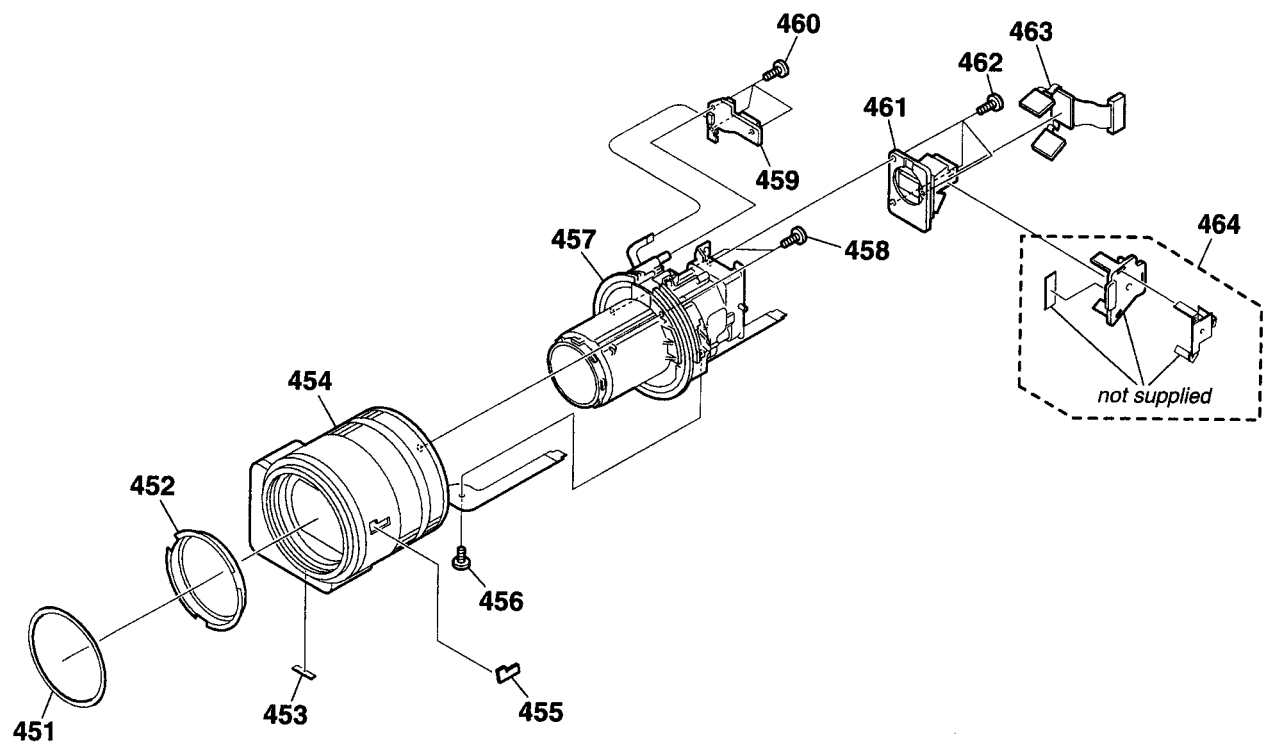
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
351	7-682-654-09	SCREW +PS M3X25		370	3-063-653-01	COVER, HANDLE (TOP)	
* 352	3-687-070-01	WASHER, SHOE		371	A-7074-542-A	HP-129 BOARD, COMPLETE	
353	3-686-261-03	SHOE3, SLIDE, VF		372	A-7074-543-A	TH-010 BOARD, COMPLETE	
* 354	3-720-919-01	RUBBER, LOCK RING		373	3-968-729-51	SCREW (M2), LOCK ACE, P2	
* 355	3-679-543-11	RING (D), LOCK		374	1-960-782-11	HARNESS (VH-050) 12P	
356	7-683-421-04	BOLT, HEXAGON SOCKET M4X12		375	3-063-665-01	ARM, SLIDE	
357	3-063-659-01	BASE, VF SHOE		376	3-063-663-01	COVER, PHONE	
358	3-061-062-01	BOLT (M2.6), SPRING		377	3-063-617-01	KNOB, HANDLE SLIDE	
359	7-682-548-09	SCREW +B M3X8		* 378	3-063-618-01	BRACKET, HANDLE SLIDE KNOB	
* 360	3-063-661-01	COVER, HANDLE (FRONT)		379	3-063-664-01	KEY, REV	
* 361	3-063-657-01	GUIDE (L), ARM		380	1-960-785-11	HARNESS (VL-054) 4P	
* 362	3-063-655-01	GUIDE (R), ARM		381	A-7074-541-A	VL-034 BOARD, COMPLETE	
363	3-968-729-91	SCREW (M2), LOCK ACE, P2		* 382	3-063-715-01	RETAINER, LIGHT TERMINAL	
364	3-063-658-01	LOCK, ARM		383	3-063-330-01	GUIDE, CARRYING BELT	
365	3-063-662-01	COVER, LIGHT		384	3-063-329-01	SHAFT, CARRYING BELT	
366	3-688-754-11	SPRING		385	X-3950-951-1	HANDLE ASSY, CARRYING	
367	3-688-755-11	SHOE, ACCESSORY		386	7-682-550-09	SCREW +B M3X12	
368	3-968-729-11	SCREW (M2), LOCK ACE, P2		387	7-688-004-02	W4, SMALL	
369	A-7074-544-A	LL-010 BOARD, COMPLETE					

6-1-9. LENS BLOCK SECTION-1



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
401	3-968-729-51	SCREW (M2), LOCK ACE, P2		417	1-476-007-11	SWITCH BLOCK, CONTROL (CF-1044)	
402	1-679-394-11	FP-243 FLEXIBLE BOARD 27P		418	X-3950-936-1	RING ASSY, MI	
403	A-7074-534-A	ON-001 BOARD, COMPLETE		419	3-968-729-11	SCREW (M2), LOCK ACE, P2	
404	A-7074-533-A	NO-001 BOARD, COMPLETE		420	3-948-339-61	TAPPING	
405	1-679-393-11	FP-242 FLEXIBLE BOARD 39P		421	1-476-008-11	SWITCH BLOCK, CONTROL (EG-1044)	
* 406	3-063-712-01	BRACKET (ON)		422	X-3950-930-1	CABINET (R) ASSY, LENS	
407	7-682-548-09	SCREW +B M3X8		423	1-960-774-11	HARNESS (VF-071) 3P	
408	3-968-729-91	SCREW (M2), LOCK ACE, P2		424	A-7074-530-A	FC-074 BOARD, COMPLETE	
409	3-063-716-01	BASE, GRIP		425	3-063-562-01	HOLDER, MF KNOB	
410	3-063-610-01	WINDOW (G), RAY CATCHER		426	3-063-604-01	SPRING, COMPRESSION (SW)	
411	3-063-664-01	KEY, REV		427	3-063-561-01	ESCUTCHEON, MF	
412	3-063-612-01	BELT, GRIP		428	3-063-560-01	KNOB, MF	
413	X-3950-933-1	KNOB ASSY, SLIDE		429	X-3950-934-1	KNOB ASSY, ND	
414	X-3950-946-1	GRIP ASSY		430	3-060-795-01	TAPE, HARNESS FIXED	
415	3-063-611-01	KEY (A), GRIP		431	3-063-724-01	+B M3X6 (EG GRIP)	
416	1-960-775-11	HARNESS (VG-052) 12P					

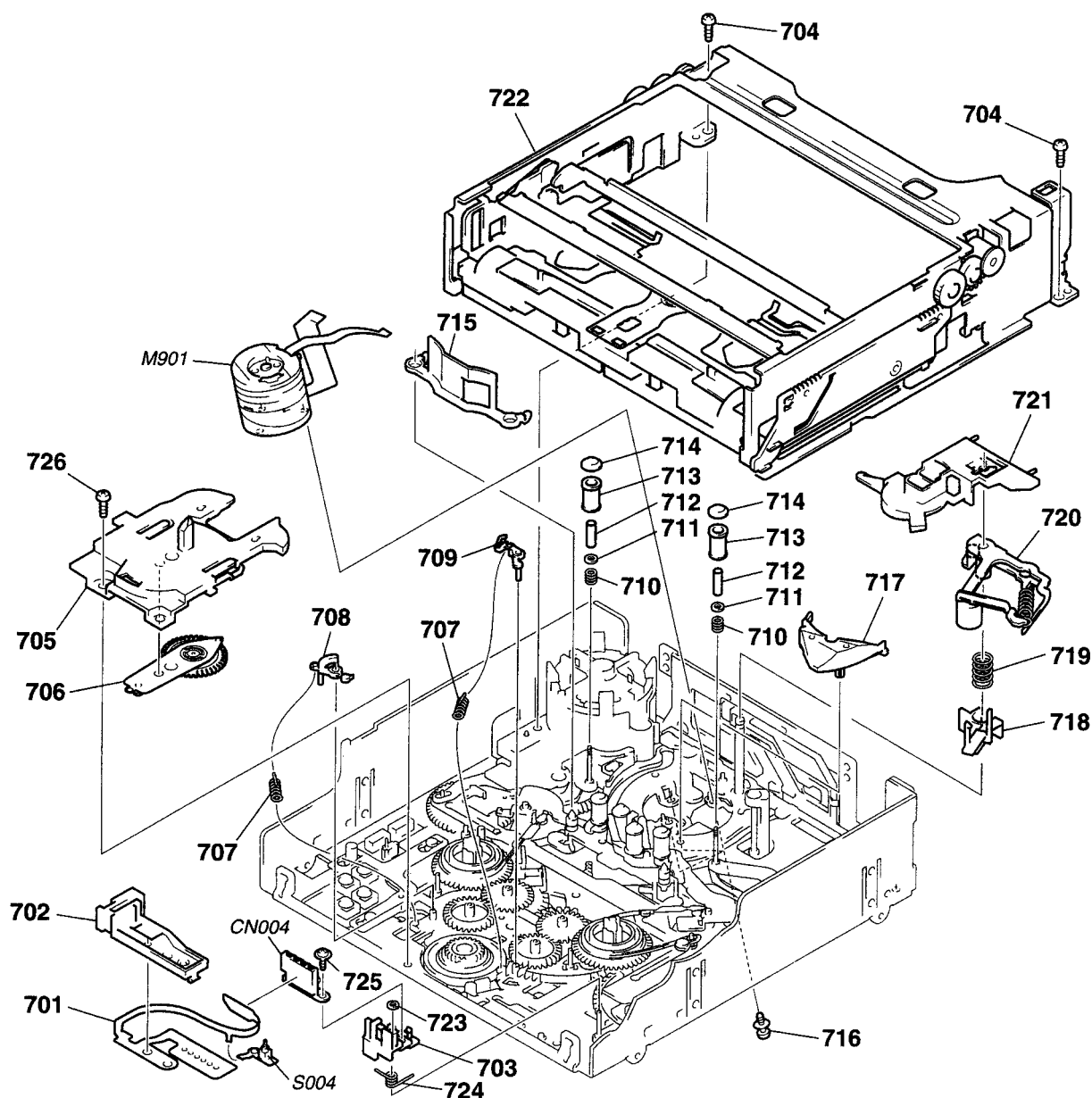
6-1-10. LENS BLOCK SECTION-2



Be sure to read "Precautions upon replacing CCD imager" on page 4-9 when changing the CCD imager.

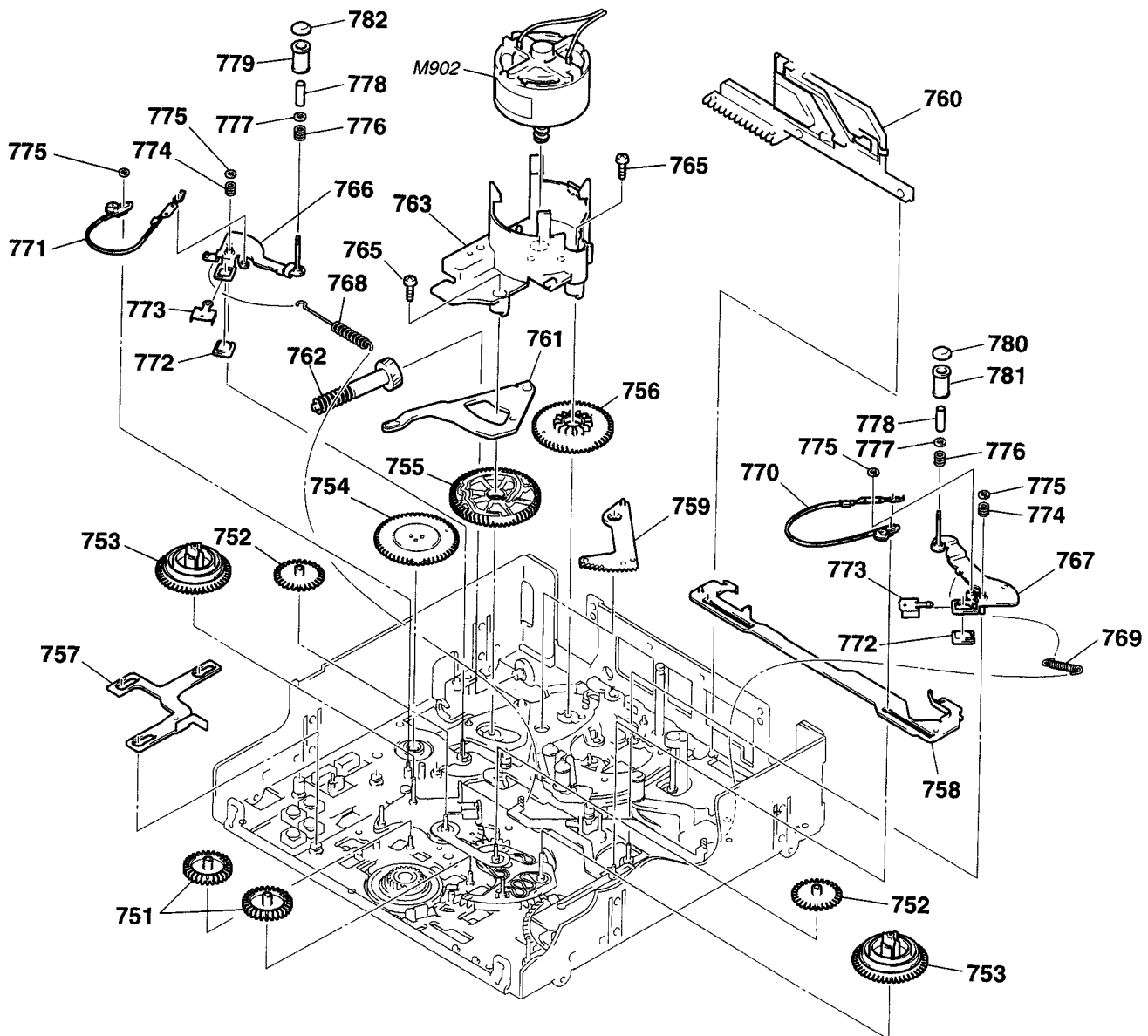
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
451	3-060-681-01	RING, NAME		460	3-948-339-61	TAPPING	
452	3-709-594-01	RING ASSY, GLASS ORNAMENTAL		461	A-7031-100-A	PRISM ASSY (SERVICE) (INCLUDING 3CCD)	
453	3-062-454-01	FOOT (A), RUBBER					(250)
454	3-709-595-21	VAP ASSY (BC114C)		461	A-7031-101-A	PRISM ASSY (SERVICE) (INCLUDING 3CCD)	
455	3-963-933-01	EMBLEM, CCD					(250P)
456	3-713-791-91	SCREW (M1.7)		462	3-713-791-61	SCREW (M1.7X7), TAPPING, P2	
457	3-709-596-01	LENS ASSY, ZOOM		463	A-7074-531-A	CD-274 BOARD, COMPLETE	
458	3-948-339-31	SCREW, TAPPING P2					
459	A-7074-532-A	SE-116 BOARD, COMPLETE		464	X-3950-586-1	COVER ASSY, PRISM	

6-1-11. DRUM SECTION



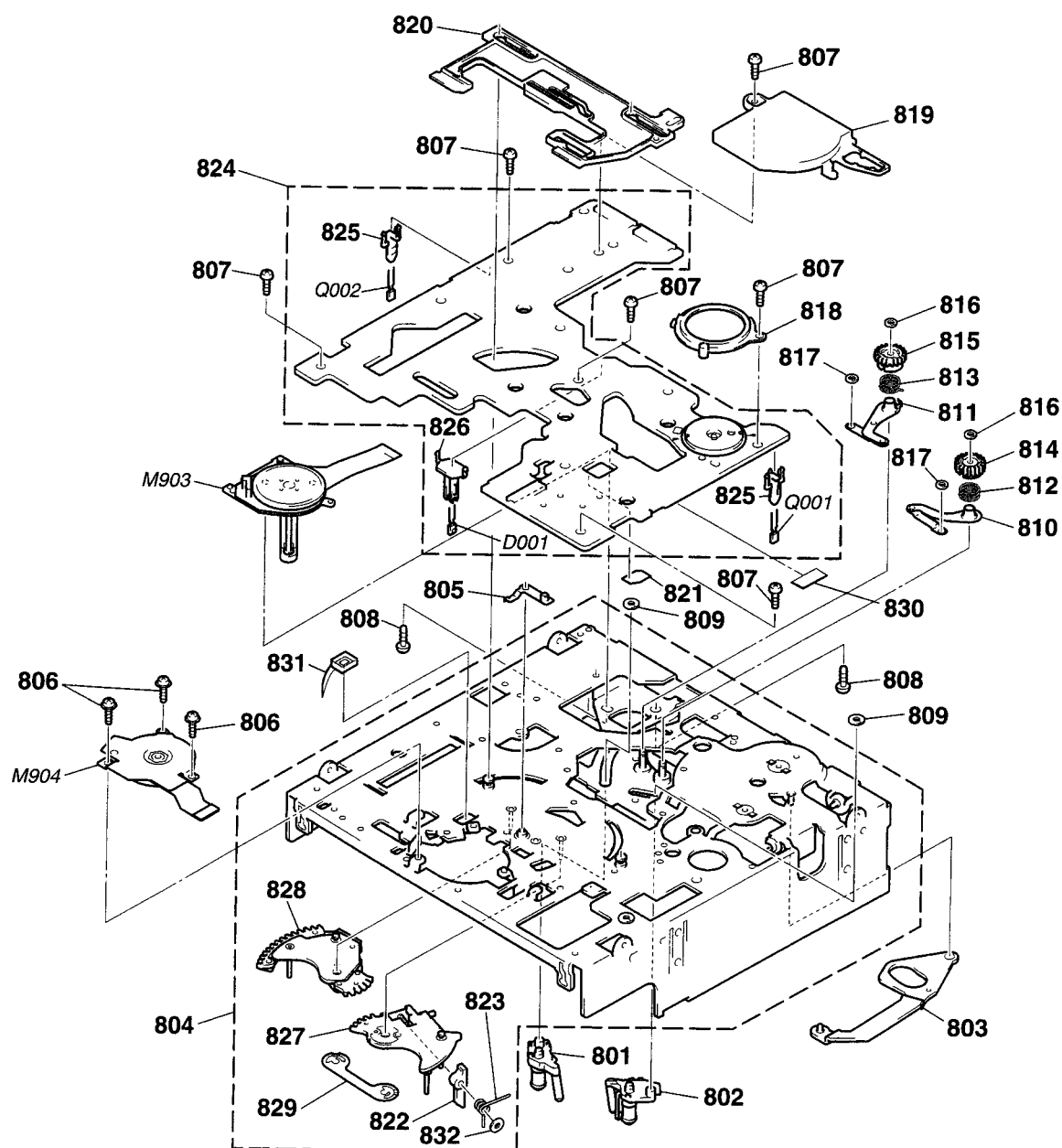
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
701	1-675-561-11	FP-104 FLEXIBLE BOARD		716	A-7094-608-B	SCREW ASSY, DRUM FITTING	
* 702	3-057-351-01	GUIDE, MIC BASE		717	3-973-171-01	SUPPORT, TAPE	
703	3-057-350-02	BASE, MIC		718	3-057-227-01	RETAINER, TAPE	
704	3-732-817-01	SCREW (M2X4.5), TAPPING		719	3-973-818-01	SPRING, COMPRESSION (TAPE RETAINER)	
705	3-057-319-01	RETAINER, PENDULUM		720	X-3949-915-1	ARM ASSY, PINCH	
706	X-3949-922-1	ARM ASSY, PENDULUM		721	3-057-228-01	CAP, DRUM	
707	3-057-286-01	SPRING, EXTENSION (BRAKE)		722	A-7094-602-B	CASSETTE COMPARTMENT BLOCK ASSY	
708	3-057-280-01	ARM (S), BRAKE		723	3-726-829-01	WASHER, STOPPER	
709	3-057-279-01	BRAKE (T), RATCHET		724	3-057-353-01	SPRING, MIC BASE	
710	3-057-232-01	SPRING, COMPRESSION (TG)		725	3-318-201-11	SCREW (B) (M1.4X3), TAPPING	
711	3-057-238-01	RING, TG		726	3-973-266-01	SCREW (M2X2.2 (MEK)), HEAD	
712	3-057-237-01	SLEEVE, TG		CN004	1-770-312-21	CONNECTOR 4P	
713	3-057-235-01	ROLLER, TG		M901	A-4900-303-A	DRUM ASSY (SERVICE) (DEH-21A-R)	
714	3-057-234-01	FLANGE, TG UPPER		S004	1-762-351-21	SWITCH, PUSH (1 KEY) (REC PROOF)	
715	3-057-379-01	GUARD, GUIDE					

6-1-12. GEAR, ARM SECTION



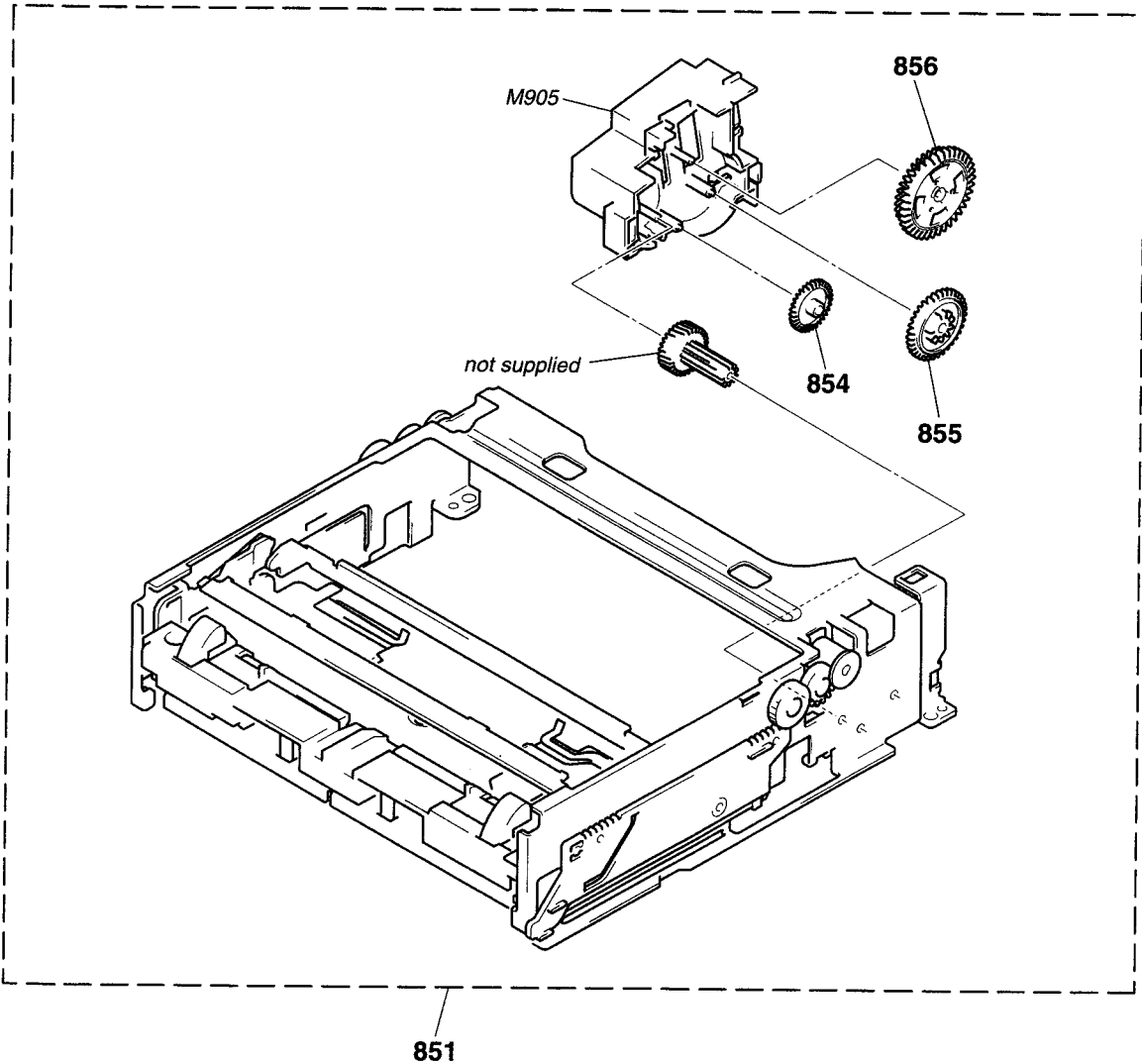
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
751	X-3949-923-1	GEAR (A) ASSY, IDLER		768	3-057-295-01	SPRING, EXTENSION (TG2)	
752	3-057-311-01	GEAR (B), IDLER		769	3-057-296-02	SPRING, EXTENSION (TG7)	
753	A-7094-599-A	REEL (LARGE) BLOCK ASSY		770	X-3949-921-1	BAND (TG7) ASSY	
754	3-057-267-01	GEAR, ENCODER		771	X-3949-920-1	BAND (TG2) ASSY	
755	3-057-294-01	GEAR, MAIN CAM		772	3-057-281-01	MAGNET, ET	
756	3-973-140-01	GEAR, SUB CAM		773	3-057-336-01	HOLDER, MAGNET	
* 757	3-057-302-01	SLIDER, SBR		774	3-057-344-01	SPRING, COMPRESSION (TG ARM)	
* 758	3-057-314-01	SLIDER, SUB		775	3-726-829-01	WASHER, STOPPER	
759	X-3950-816-1	ARM ASSY, LOADING		776	3-057-232-01	SPRING, COMPRESSION (TG)	
760	3-057-221-01	SLIDER, PINCH		777	3-057-238-01	RING, TG	
761	3-057-252-01	ARM, SUB SLIDER		778	3-057-237-01	SLEEVE, TG	
762	3-973-159-01	GEAR, JOINT		779	3-057-235-01	ROLLER, TG	
763	3-057-222-02	HOLDER, MOTOR		780	3-057-234-01	FLANGE, TG UPPER	
765	3-973-266-01	SCREW (M2X2.2 (MEK)), HEAD		781	3-057-337-01	ROLLER, TG7	
766	X-3949-918-1	ARM ASSY, TG2		782	3-063-887-01	FLANGE (2), TG UPPER	
767	X-3949-919-1	ARM ASSY, TG7		M902	X-3946-702-1	MOTOR ASSY, CAM	

6-1-13. MOTOR, MD-76 BOARD SECTION



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
801	A-7025-007-A	COASTER (T) BLOCK ASSY		820	3-057-282-01	SLIDER, MAIN	
802	A-7025-006-A	COASTER (S) ASSY		821	1-657-785-11	FP-248 FLEXIBLE BOARD (DEW SENSOR)	
* 803	3-057-283-01	ARM, MAIN SLIDER		822	3-057-320-01	BLOCK, REEL LOCK RELEASE	
804	X-3949-916-9	CHASSIS ASSY, MECHANICAL		823	3-057-354-01	SPRING, REEL LOCK RELEASE	
805	X-3949-924-1	STOPPER ASSY, PENDULUM		824	A-7067-229-A	MD-76 BOARD, COMPLETE	
806	3-947-503-01	SCREW (M1.4)		* 825	3-057-376-01	HOLDER, SENSOR	
807	3-732-817-01	SCREW (M2X4.5), TAPPING		* 826	3-057-555-01	HOLDER, LED	
808	3-973-266-01	SCREW (M2X2.2 (MEK)), HEAD		827	X-3950-199-1	RAIL BASE, S ASSY (SERVICE)	
809	3-973-142-01	STOPPER, COASTER PUNCHING		828	X-3950-200-1	RAIL BASE, T ASSY (SERVICE)	
810	X-3946-690-1	ARM(S) ASSY, GL		829	3-057-265-01	RETAINER, REEL BASE	
811	X-3946-689-1	ARM (T) ASSY, GL		830	3-941-343-21	TAPE (A)	
812	3-973-146-02	SPRING (S), GL TORSION		831	3-064-576-01	ECLIPSE	
813	3-973-156-02	SPRING (T), GL TORSION		832	3-726-829-01	WASHER, STOPPER	
814	3-973-264-01	GEAR (S), GL		D001	8-719-988-42	DIODE GL453S (TAPE LED)	
815	3-973-138-01	GEAR (T), GL		M903	8-835-648-01	MOTOR, DC (SCD17A/J-N) (CAPSTAN)	
816	3-727-176-01	WASHER, STOPPER		M904	X-3949-928-1	MOTOR ASSY, REEL	
817	3-973-143-01	WASHER, COASTER STOPPER		Q001	8-729-907-25	PHOTO TRANSISTOR PT4850F (TAPE END)	
818	3-057-339-01	COVER, ENCODER		Q002	8-729-907-25	PHOTO TRANSISTOR PT4850F (TAPE TOP)	
819	3-057-340-01	COVER, CAPSTAN					

6-1-14. CASSETTE COMPARTMENT BLOCK ASSEMBLY



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
851	A-7094-602-B	CASSETTE COMPARTMENT BLOCK ASSY		856	A-7094-689-A	GEAR CD BLOCK ASSY (SERVICE)	
854	3-057-254-01	GEAR (A)		M905	X-3949-925-1	MOTOR ASSY, FL	
855	3-057-255-01	GEAR (B)					

6-2. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
uF: μ F
- RESISTORS
All resistors are in ohms.
METAL: metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable
- COILS
uH: μ H
- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A..., uPA..., μ PA...,
uPB..., μ PB..., uPC..., μ PC...,
uPD..., μ PD...

When indicating parts by reference number, please include the board name.

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remarks
	A-7074-537-A	AE-023 BOARD, COMPLETE *****	(Ref.No.;1000Series)
		< CONNECTOR >	
CN041	1-778-508-21	PIN, CONNECTOR (PC BOARD) 6P	
		< DIODE >	
D041	8-719-064-61	DIODE 01BZA8.2(TE85L)	
D042	8-719-064-61	DIODE 01BZA8.2(TE85L)	
D043	8-719-064-61	DIODE 01BZA8.2(TE85L)	
		< RESISTOR >	
R041	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R042	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R043	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R044	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R045	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
		< SWITCH >	
S041	1-570-985-11	SWITCH, TOGGLE (GAIN)	
S042	1-570-985-11	SWITCH, TOGGLE (WHITE BAL)	
S043	1-570-984-11	SWITCH, TOGGLE (PRESET)	
S044	1-571-396-11	SWITCH, TOGGLE (CUSTOM)	
S045	1-572-660-11	SWITCH, TOGGLE (AE SHIFT)	
		A-7074-531-A CD-274 BOARD, COMPLETE *****	(Ref.No.;1000Series)
		(IC100,101,102 are not included in this completed board)	
		< CAPACITOR >	
C100	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C101	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C102	1-119-751-11	TANTAL. CHIP 22uF 20% 16V	
C103	1-119-751-11	TANTAL. CHIP 22uF 20% 16V	
C104	1-127-760-11	CERAMIC CHIP 4.7uF 10% 6.3V	
C105	1-127-760-11	CERAMIC CHIP 4.7uF 10% 6.3V	
C108	1-104-851-11	TANTAL. CHIP 10uF 20% 10V	
C109	1-107-686-11	TANTAL. CHIP 4.7uF 20% 16V	
C110	1-127-760-11	CERAMIC CHIP 4.7uF 10% 6.3V	
C111	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V	
C112	1-107-686-11	TANTAL. CHIP 4.7uF 20% 16V	
C113	1-104-851-11	TANTAL. CHIP 10uF 20% 10V	
C114	1-107-686-11	TANTAL. CHIP 4.7uF 20% 16V	
C115	1-104-851-11	TANTAL. CHIP 10uF 20% 10V	
C117	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V	

Ref. No.	Part No.	Description	Remarks
C118	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V	
C119	1-119-751-11	TANTAL. CHIP 22uF 20% 16V	
C120	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C130	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C131	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
C132	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C133	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
C134	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
C135	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
		< CONNECTOR >	
CN100	1-778-078-21	CONNECTOR, BOARD TO BOARD 50P	
		< IC >	
IC103	8-759-561-46	IC AD8014ART-REEL7	
IC104	8-759-561-46	IC AD8014ART-REEL7	
IC105	8-759-561-46	IC AD8014ART-REEL7	
		< COIL >	
L100	1-412-963-11	INDUCTOR 100uH	
L101	1-412-963-11	INDUCTOR 100uH	
L104	1-412-963-11	INDUCTOR 100uH	
L105	1-412-963-11	INDUCTOR 100uH	
L106	1-412-963-11	INDUCTOR 100uH	
L107	1-412-963-11	INDUCTOR 100uH	
		< RESISTOR >	
R100	1-218-962-11	RES-CHIP 5.6K 5% 1/16W	
R101	1-218-961-11	RES-CHIP 4.7K 5% 1/16W	
R102	1-218-962-11	RES-CHIP 5.6K 5% 1/16W	
R103	1-218-961-11	RES-CHIP 4.7K 5% 1/16W	
R104	1-218-961-11	RES-CHIP 4.7K 5% 1/16W	
R105	1-218-962-11	RES-CHIP 5.6K 5% 1/16W	
R106	1-218-953-11	RES-CHIP 1K 5% 1/16W	
R107	1-218-940-11	RES-CHIP 82 5% 1/16W	
R108	1-218-953-11	RES-CHIP 1K 5% 1/16W	
R109	1-218-940-11	RES-CHIP 82 5% 1/16W	
R110	1-218-953-11	RES-CHIP 1K 5% 1/16W	
R111	1-218-940-11	RES-CHIP 82 5% 1/16W	
R112	1-220-210-11	RES-CHIP 200K 5% 1/16W	
R113	1-220-210-11	RES-CHIP 200K 5% 1/16W	
R114	1-220-210-11	RES-CHIP 200K 5% 1/16W	

Be sure to read "Precautions upon replacing CCD imager" on page 4-9 when changing the CCD imager.

Ref. No.	Part No.	Description	Remarks
	A-7074-552-A	DC-095 BOARD, COMPLETE	

		(Ref.No.:1000Series)	

< CONNECTOR >

CN281	1-506-467-11	PIN, CONNECTOR 2P	
CN282	1-563-929-11	CONNECTOR, ROUND TYPE (RF) 4P	(DC OUT 12V)

	A-7074-552-A	DD-146 BOARD, COMPLETE	

		(Ref.No.:1000Series)	

< CAPACITOR >

C302	1-104-478-11	TANTAL. CHIP	10uF	20%	35V
C304	1-107-690-11	TANTAL. CHIP	6.8uF	20%	35V
C305	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C306	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C307	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C308	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C309	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C310	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C311	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C312	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C313	1-125-988-21	ELECT CHIP	330uF	20%	25V
C314	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C315	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C316	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C317	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C318	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C319	1-128-347-11	ELECT CHIP	82uF	20%	16V
C320	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C321	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C323	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C324	1-104-919-11	TANTAL. CHIP	10uF	20%	25V
C325	1-107-690-11	TANTAL. CHIP	6.8uF	20%	35V
C326	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C327	1-104-760-11	CERAMIC CHIP	0.047uF	10%	50V
C328	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C331	1-110-618-11	ELECT	12uF	20%	63V
C332	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C333	1-125-988-21	ELECT CHIP	330uF	20%	25V
C334	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C335	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C336	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C337	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C338	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C339	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C340	1-110-618-11	ELECT	12uF	20%	63V
C341	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C342	1-125-988-21	ELECT CHIP	330uF	20%	25V
C343	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C344	1-104-920-11	TANTAL. CHIP	4.7uF	20%	35V
C345	1-104-920-11	TANTAL. CHIP	4.7uF	20%	35V
C346	1-117-193-11	CERAMIC	1.5uF		50V
C347	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C348	1-104-920-11	TANTAL. CHIP	4.7uF	20%	35V
C349	1-104-920-11	TANTAL. CHIP	4.7uF	20%	35V
C350	1-104-920-11	TANTAL. CHIP	4.7uF	20%	35V

Ref. No.	Part No.	Description	Remarks
C351	1-104-920-11	TANTAL. CHIP	4.7uF 20% 35V
C352	1-110-398-11	TANTAL. CHIP	15uF 20% 35V
C353	1-110-398-11	TANTAL. CHIP	15uF 20% 35V

< CONNECTOR >

* CN301	1-560-356-00	CONNECTOR POST HEADER,ILG (2P)	
CN302	1-506-469-11	PIN, CONNECTOR 4P	
CN303	1-506-474-11	PIN, CONNECTOR 9P	
CN304	1-506-467-11	PIN, CONNECTOR 2P	
* CN305	1-766-383-11	PIN, CONNECTOR (1.5MM)(SMD)12P	
CN306	1-691-550-11	PIN, CONNECTOR (1.5MM)(SMD) 3P	

< DIODE >

D301	8-719-066-98	DIODE	RB051L-40TE25
D302	8-719-987-21	DIODE	SB02-09CP-TB
D304	8-719-941-86	DIODE	DAN202UT106
D305	8-719-066-33	DIODE	RB081L-20TE25

< FUSE >

△ F301	1-576-286-21	FUSE, MICRO (1.4A/24V)	
△ F302	1-576-286-21	FUSE, MICRO (1.4A/24V)	
△ F303	1-576-286-21	FUSE, MICRO (1.4A/24V)	
△ F304	1-576-286-21	FUSE, MICRO (1.4A/24V)	
△ F305	1-576-286-21	FUSE, MICRO (1.4A/24V)	
△ F307	1-576-410-21	FUSE, CHIP (2A/63V)	

< IC >

IC301	8-759-521-35	IC	TL5001CDR
IC302	8-759-521-35	IC	TL5001CDR
IC303	8-759-521-35	IC	TL5001CDR
IC304	8-759-701-36	IC	NJM3403AM

< COIL >

L301	1-412-058-11	INDUCTOR CHIP	10uH
L302	1-419-824-11	INDUCTOR	6.8uH
L304	1-416-906-11	INDUCTOR	33uH
L306	1-414-405-11	INDUCTOR	150uH
L308	1-419-822-21	INDUCTOR	7uH
L309	1-419-823-21	INDUCTOR	33uH
L310	1-416-865-21	INDUCTOR	33uH

< IC LINK >

△ PS302	1-576-123-21	LINK, IC (0.8A)	
△ PS303	1-576-123-21	LINK, IC (0.8A)	
△ PS304	1-576-123-21	LINK, IC (0.8A)	

< TRANSISTOR >

Q303	8-729-117-32	TRANSISTOR	2SC4177-T1L5L6
Q304	8-729-140-63	TRANSISTOR	2SA1611T1-M5M6
Q305	8-729-033-65	TRANSISTOR	2SJ204-T1B
Q306	8-729-117-32	TRANSISTOR	2SC4177-T1L5L6
Q307	8-729-117-32	TRANSISTOR	2SC4177-T1L5L6
Q308	8-729-043-74	TRANSISTOR	SI4435DY-T1-REVA
Q309	8-729-117-32	TRANSISTOR	2SC4177-T1L5L6
Q310	8-729-041-23	TRANSISTOR	NDS356AP
Q311	8-729-117-32	TRANSISTOR	2SC4177-T1L5L6
Q312	8-729-140-63	TRANSISTOR	2SA1611T1-M5M6

Note :

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Note :

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remarks
Q313	8-729-029-14	TRANSISTOR	DTC144EUA-T106
Q314	8-729-028-91	TRANSISTOR	DTA144EUA-T106
Q315	8-729-042-92	TRANSISTOR	2SK1470-TD
Q316	8-729-117-32	TRANSISTOR	2SC4177-T1L5L6
Q317	8-729-140-63	TRANSISTOR	2SA1611T1-M5M6
Q318	8-729-117-32	TRANSISTOR	2SC4177-T1L5L6
Q319	8-729-043-74	TRANSISTOR	SI4435DY-T1-REVA
Q320	8-729-117-32	TRANSISTOR	2SC4177-T1L5L6
Q321	8-729-045-16	TRANSISTOR	SI4410DY-T1-REVA
Q322	8-729-117-32	TRANSISTOR	2SC4177-T1L5L6
Q323	8-729-117-32	TRANSISTOR	2SC4177-T1L5L6
< RESISTOR >			
R302	1-216-029-00	METAL CHIP	150 5% 1/10W
R303	1-218-868-11	METAL CHIP	7.5K 0.5% 1/16W
R304	1-216-829-11	METAL CHIP	4.7K 5% 1/16W
R305	1-218-897-11	METAL CHIP	120K 0.5% 1/16W
R306	1-216-073-00	METAL CHIP	10K 5% 1/10W
R307	1-216-845-11	METAL CHIP	100K 5% 1/16W
R308	1-218-847-11	METAL CHIP	1K 0.5% 1/16W
R309	1-216-846-11	METAL CHIP	120K 5% 1/16W
R310	1-216-849-11	METAL CHIP	220K 5% 1/16W
R311	1-216-073-00	METAL CHIP	10K 5% 1/10W
R312	1-216-073-00	METAL CHIP	10K 5% 1/10W
R313	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
R314	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
R315	1-216-013-00	METAL CHIP	33 5% 1/10W
R317	1-216-853-11	METAL CHIP	470K 5% 1/16W
R318	1-216-105-91	RES-CHIP	220K 5% 1/10W
R319	1-216-097-11	RES-CHIP	100K 5% 1/10W
R320	1-216-833-11	METAL CHIP	10K 5% 1/16W
R321	1-216-829-11	METAL CHIP	4.7K 5% 1/16W
R322	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
R323	1-216-845-11	METAL CHIP	100K 5% 1/16W
R324	1-216-841-11	METAL CHIP	47K 5% 1/16W
R325	1-216-809-11	METAL CHIP	100 5% 1/16W
R326	1-216-864-11	METAL CHIP	0 5% 1/16W
R327	1-216-097-11	RES-CHIP	100K 5% 1/10W
R328	1-216-029-00	METAL CHIP	150 5% 1/10W
R330	1-208-807-11	METAL CHIP	11K 0.5% 1/10W
R331	1-216-829-11	METAL CHIP	4.7K 5% 1/16W
R332	1-216-073-00	METAL CHIP	10K 5% 1/10W
R333	1-216-845-11	METAL CHIP	100K 5% 1/16W
R334	1-218-847-11	METAL CHIP	1K 0.5% 1/16W
R335	1-216-073-00	METAL CHIP	10K 5% 1/10W
R336	1-216-073-00	METAL CHIP	10K 5% 1/10W
R337	1-216-013-00	METAL CHIP	33 5% 1/10W
R338	1-216-025-11	RES-CHIP	100 5% 1/10W
R339	1-216-105-91	RES-CHIP	220K 5% 1/10W
R340	1-216-097-11	RES-CHIP	100K 5% 1/10W
R341	1-218-879-11	METAL CHIP	22K 0.5% 1/16W
R342	1-218-877-11	METAL CHIP	18K 0.5% 1/16W
R343	1-218-865-11	METAL CHIP	5.6K 0.5% 1/16W
R344	1-218-847-11	METAL CHIP	1K 0.5% 1/16W
R345	1-216-077-91	RES-CHIP	15K 5% 1/10W
R346	1-216-049-11	RES-CHIP	1K 5% 1/10W
R347	1-216-073-00	METAL CHIP	10K 5% 1/10W
R348	1-216-838-11	METAL CHIP	27K 5% 1/16W

Ref. No.	Part No.	Description	Remarks
R349	1-216-105-91	RES-CHIP	220K 5% 1/10W
R350	1-216-829-11	METAL CHIP	4.7K 5% 1/16W
R351	1-219-989-11	RES-CHIP	0.02 1% 1W
R352	1-216-097-11	RES-CHIP	100K 5% 1/10W
R353	1-216-838-11	METAL CHIP	27K 5% 1/16W
R354	1-216-838-11	METAL CHIP	27K 5% 1/16W
R404	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
A-7074-550-A DV-031 BOARD, COMPLETE			

(Ref.No.;1000Series)			
< CONNECTOR >			
* CN161	1-580-789-21	PIN, CONNECTOR (SMD) 6P	
CN162	1-793-304-12	SQUARE-BUILT CONNECTOR(1394)	(DV IN/OUT)
< SHORT JUMPER >			
JS161	1-216-296-91	SHORT	0
JS162	1-216-296-91	SHORT	0
A-7074-554-A EJ-034 BOARD, COMPLETE			

(Ref.No.;1000Series)			
< CONNECTOR >			
CN291	1-766-336-21	CONNECTOR, FFC/FPC 6P	
< SWITCH >			
S291	1-771-138-61	SWITCH, KEY BOARD (EJECT)	
A-7074-530-A FC-074 BOARD, COMPLETE			

(Ref.No.;1000Series)			
< CONNECTOR >			
* CN221	1-793-137-21	PIN, CONNECTOR 3P	
< DIODE >			
D221	8-719-073-03	DIODE MA8082-(K8).S0	
D222	8-719-062-16	DIODE 01ZA8.2(TPL3)	
< RESISTOR >			
R223	1-216-837-11	METAL CHIP	22K 5% 1/16W
< SWITCH >			
S221	1-572-078-11	SWITCH, TACTILE (PUSH AUTO)	
S222	1-771-487-21	SWITCH, SLIDE (INFINITY/MANU/AUTO)	
A-7074-556-A FS-082 BOARD, COMPLETE			

(Ref.No.;2000Series)			
< CONNECTOR >			
CN401	1-778-508-21	PIN, CONNECTOR (PC BOARD) 6P	

FS-082

HP-129

IN-057

JK-197

Ref. No.	Part No.	Description	Remarks
< DIODE >			
D401	8-719-064-61	DIODE 01BZA8.2(TE85L)	
D402	8-719-064-61	DIODE 01BZA8.2(TE85L)	
< RESISTOR >			
R401	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R402	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R403	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R404	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R405	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R408	1-216-864-11	METAL CHIP 0 5% 1/16W	
< VARIABLE RESISTOR >			
RV401	1-225-610-11	RES, VAR, CARBON 5K/5K (AUDIO LEVEL)	
< SWITCH >			
S401	1-571-414-11	SWITCH, TOGGLE (SHUTTER ON/OFF)	
S402	1-771-435-11	SWITCH, TACTILE (START/STOP)	
S403	1-771-435-11	SWITCH, TACTILE (INDEX MARK)	
S404	1-571-417-11	SWITCH, TOGGLE (WHITE BAL ON/OFF)	
* S405	1-571-914-21	SWITCH, TACTILE (FADER)	

A-7074-542-A HP-129 BOARD, COMPLETE

(Ref.No.;1000Series)

< CAPACITOR >

C901	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C902	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	

< CONNECTOR >

CN901	1-778-508-21	PIN, CONNECTOR (PC BOARD) 6P	
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< DIODE >

D901	8-719-062-16	DIODE 01ZA8.2(TPL3)	
D902	8-719-062-16	DIODE 01ZA8.2(TPL3)	
D903	8-719-062-16	DIODE 01ZA8.2(TPL3)	
D904	8-719-062-16	DIODE 01ZA8.2(TPL3)	

< JACK >

J901	1-507-980-41	JACK (PHONES)	
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< SHORT JUMPER >

JS901	1-216-864-11	METAL CHIP 0 5% 1/16W	
JS902	1-216-864-11	METAL CHIP 0 5% 1/16W	
JS903	1-216-864-11	METAL CHIP 0 5% 1/16W	
JS904	1-216-864-11	METAL CHIP 0 5% 1/16W	
JS905	1-216-864-11	METAL CHIP 0 5% 1/16W	

A-7074-548-A IN-057 BOARD, COMPLETE

(Ref.No.;1000Series)

< CAPACITOR >

C241	1-128-406-11	ELECT CHIP 33uF 20% 50V	
C242	1-163-021-91	CERAMIC CHIP 0.01uF 10% 50V	
C243	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	

Ref. No.	Part No.	Description	Remarks
< CIRCUIT BREAKER >			
CB241	1-532-524-11	BREAKER, CIRCUIT	
< CONNECTOR >			
CN241	1-506-485-11	PIN, CONNECTOR 6P	
* CN242	1-566-693-11	PIN, CONNECTOR 2P	
CN243	1-506-474-11	PIN, CONNECTOR 9P	
< DIODE >			
D241	8-719-030-03	DIODE EA60QC06-TE16F2	
< TRANSISTOR >			
Q241	8-729-043-74	TRANSISTOR SI4435DY-T1-REVA	
Q242	8-729-043-74	TRANSISTOR SI4435DY-T1-REVA	
Q243	8-729-043-74	TRANSISTOR SI4435DY-T1-REVA	
< RESISTOR >			
R243	1-216-097-11	RES-CHIP 100K 5% 1/10W	
R244	1-216-097-11	RES-CHIP 100K 5% 1/10W	

A-7074-555-A JK-197 BOARD, COMPLETE

(Ref.No.;1000Series)

< CONNECTOR >

CN181	1-785-283-21	PIN, CONNECTOR (PC BOARD) 14P	
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< DIODE >

D181	8-719-062-16	DIODE 01ZA8.2(TPL3)	
D182	8-719-073-03	DIODE MA8082-(K8).SO	
D183	8-719-062-16	DIODE 01ZA8.2(TPL3)	
D184	8-719-062-16	DIODE 01ZA8.2(TPL3)	
D185	8-719-062-16	DIODE 01ZA8.2(TPL3)	

D186	8-719-073-03	DIODE MA8082-(K8).SO	
D187	8-719-062-16	DIODE 01ZA8.2(TPL3)	
D188	8-719-073-03	DIODE MA8082-(K8).SO	
D189	8-719-073-03	DIODE MA8082-(K8).SO	

< FERRITE BEAD >

FB181	1-500-444-11	FERRITE 0UH	
FB182	1-500-444-11	FERRITE 0UH	

< JACK >

J181	1-694-713-11	TERMINAL BOARD (VIDEO/LCH/RCH)	
J182	1-566-850-31	CONNECTOR, (S) TERMINAL 4P (S VIDEO)	

< COIL >

L181	1-412-963-11	INDUCTOR 100uH	
L182	1-412-963-11	INDUCTOR 100uH	

< RESISTOR >

R181	1-216-864-11	METAL CHIP 0 5% 1/16W	
R182	1-216-864-11	METAL CHIP 0 5% 1/16W	
R184	1-216-864-11	METAL CHIP 0 5% 1/16W	
R185	1-216-864-11	METAL CHIP 0 5% 1/16W	
R186	1-216-864-11	METAL CHIP 0 5% 1/16W	

Ref. No.	Part No.	Description	Remarks
R187	1-216-864-11	METAL CHIP 0 5%	1/16W
R188	1-216-864-11	METAL CHIP 0 5%	1/16W
R189	1-216-864-11	METAL CHIP 0 5%	1/16W
R190	1-216-864-11	METAL CHIP 0 5%	1/16W

A-7074-538-A KP-011 BOARD, COMPLETE

(Ref.No.:1000Series)

< CONNECTOR >

CN121 1-793-302-21 PIN, CONNECTOR (PC BOARD) 5P

< DIODE >

D121 8-719-421-59 DIODE MA3075WA-(TX)

D122 8-719-421-59 DIODE MA3075WA-(TX)

< SWITCH >

S121 1-771-025-21 SWITCH, ROTARY (ENCODER)

(SEL/PUSH EXEC)

A-7074-545-A KY-049 BOARD, COMPLETE

(Ref.No.:1000Series)

< CONNECTOR >

CN261 1-779-328-21 CONNECTOR, FFC/FPC 8P

CN262 1-779-327-11 CONNECTOR, FFC/FPC 6P

< DIODE >

D261 8-719-062-16 DIODE 01ZA8.2(TPL3)

< RESISTOR >

R262 1-216-822-11 METAL CHIP 1.2K 5% 1/16W

R263 1-216-822-11 METAL CHIP 1.2K 5% 1/16W

R264 1-216-823-11 METAL CHIP 1.5K 5% 1/16W

R265 1-216-823-11 METAL CHIP 1.5K 5% 1/16W

R266 1-216-827-11 METAL CHIP 3.3K 5% 1/16W

R267 1-216-827-11 METAL CHIP 3.3K 5% 1/16W

R268 1-216-831-11 METAL CHIP 6.8K 5% 1/16W

R269 1-216-831-11 METAL CHIP 6.8K 5% 1/16W

R270 1-216-837-11 METAL CHIP 22K 5% 1/16W

< SWITCH >

S261 1-572-438-11 SWITCH, TACTIL (STOP)

S262 1-572-438-11 SWITCH, TACTIL (PAUSE)

S263 1-572-438-11 SWITCH, TACTIL (REW)

S264 1-572-438-11 SWITCH, TACTIL (FF)

S265 1-572-438-11 SWITCH, TACTIL (PLAY)

S266 1-572-438-11 SWITCH, TACTIL (SLOW)

S267 1-572-438-11 SWITCH, TACTIL (REC)

S268 1-572-438-11 SWITCH, TACTIL (AUDIO DUB)

S269 1-572-438-11 SWITCH, TACTIL (REC)

S270 1-572-438-11 SWITCH, TACTIL (FRAME+)

S271 1-572-438-11 SWITCH, TACTIL (FRAME-)

Ref. No.	Part No.	Description	Remarks
A-7074-544-A	LL-010 BOARD, COMPLETE	*****	(Ref.No.:1000Series)

< CONNECTOR >

CN471 1-778-507-21 PIN, CONNECTOR (PC BOARD) 4P

< DIODE >

D471 8-719-064-61 DIODE 01BZA8.2(TE85L)

D472 8-719-064-61 DIODE 01BZA8.2(TE85L)

< RESISTOR >

R471 1-216-837-11 METAL CHIP 22K 5% 1/16W

< SWITCH >

S471 1-762-333-21 SWITCH, TACTILE (EDIT-/REC REV)

S472 1-762-333-21 SWITCH, TACTILE (EDIT+)

S473 1-571-767-11 SWITCH, SLIDE (LIGHT)

S474 1-571-767-11 SWITCH, SLIDE (LOW CUT ON/OFF)

A-7067-229-A MD-76 BOARD, COMPLETE

(Ref.No.:3000Series)

3-057-376-01 HOLDER, SENSOR

3-057-555-01 HOLDER, LED

3-973-185-01 ENCODER

< CAPACITOR >

C001 1-162-970-11 CERAMIC CHIP 0.01uF 10% 25V

C002 1-104-851-11 TANTAL. CHIP 10uF 20% 10V

< CONNECTOR >

CN001 1-691-359-21 CONNECTOR, FFC/FPC (ZIF) 21P

CN002 1-691-359-21 CONNECTOR, FFC/FPC (ZIF) 21P

CN003 1-691-356-21 CONNECTOR, FFC/FPC (ZIF) 18P

< DIODE >

D001 8-719-988-42 DIODE GL453S

< IC >

IC001 8-759-510-71 IC BA10358F-E2

IC002 8-719-052-03 ELEMENT, HOLE THS124TE85L

IC003 8-719-052-03 ELEMENT, HOLE THS124TE85L

IC004 8-719-801-60 PHOTO TRANSISTOR TLP907-OLB

IC005 8-719-801-60 PHOTO TRANSISTOR TLP907-OLB

< JUMPER RESISTOR >

JR001 1-216-296-91 SHORT 0

JR003 1-216-296-91 SHORT 0

JR004 1-216-296-91 SHORT 0

JR005 1-216-296-91 SHORT 0

JR006 1-216-864-11 METAL CHIP 0 5% 1/16W

< TRANSISTOR >

Q001 8-729-907-25 PHOTO TRAN ISTOR PT4850F

Q002 8-729-907-25 PHOTO TRAN ISTOR PT4850F

Ref. No.	Part No.	Description	Remarks			
< RESISTOR >						
R001	1-216-816-11	METAL CHIP	390	5%	1/16W	
R003	1-216-810-11	METAL CHIP	120	5%	1/16W	
R004	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R005	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R006	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R007	1-216-809-11	METAL CHIP	100	5%	1/16W	
R008	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R009	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R010	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R011	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R012	1-216-174-00	RES-CHIP	100	5%	1/8W	
R013	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R014	1-216-180-00	RES-CHIP	180	5%	1/8W	
R015	1-216-816-11	METAL CHIP	390	5%	1/16W	
R028	1-216-809-11	METAL CHIP	100	5%	1/16W	
R029	1-216-809-11	METAL CHIP	100	5%	1/16W	
R030	1-216-864-11	METAL CHIP	0	5%	1/16W	
R031	1-216-864-11	METAL CHIP	0	5%	1/16W	
R032	1-216-864-11	METAL CHIP	0	5%	1/16W	
R033	1-216-864-11	METAL CHIP	0	5%	1/16W	
< VARIABLE RESISTOR >						
RV001	1-241-770-11	RES, ADJ, CARBON 1M				
RV002	1-238-019-11	RES, ADJ, CARBON 47K				
RV003	1-241-770-11	RES, ADJ, CARBON 1M				
RV004	1-238-019-11	RES, ADJ, CARBON 47K				
< SWITCH >						
S001	1-762-551-21	SWITCH, PUSH (L/S CAS)				
S002	1-771-604-11	SWITCH, DETECTION (C IN)				
S003	1-771-604-11	SWITCH, DETECTION (CC DOWN)				
A-7074-553-A ME-019 BOARD, COMPLETE						

(Ref.No.;1000Series)						
< CAPACITOR >						
C701	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C702	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C703	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C704	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C705	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C706	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C707	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C708	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C709	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C710	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C711	1-128-996-11	ELECT CHIP	4.7uF	20%	50V	
C712	1-128-996-11	ELECT CHIP	4.7uF	20%	50V	
C713	1-128-996-11	ELECT CHIP	4.7uF	20%	50V	
C714	1-128-996-11	ELECT CHIP	4.7uF	20%	50V	
C715	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C716	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C717	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C718	1-125-926-91	TANTAL. CHIP	4.7uF	20%	6.3V	
C719	1-125-926-91	TANTAL. CHIP	4.7uF	20%	6.3V	
C720	1-125-926-91	TANTAL. CHIP	4.7uF	20%	6.3V	

Ref. No.	Part No.	Description	Remarks			
C721	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C722	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C723	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C724	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V	
C725	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C726	1-104-913-11	TANTAL. CHIP	10uF	20%	16V	
C727	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C734	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V	
C735	1-104-913-11	TANTAL. CHIP	10uF	20%	16V	
C736	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C737	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C738	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C739	1-104-913-11	TANTAL. CHIP	10uF	20%	16V	
C740	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C741	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C742	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C743	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C744	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C745	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C746	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C749	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
< CONNECTOR >						
CN701	1-764-394-11	CONNECTOR (XLR TYPE) 3P (FRONT MIC)				
* CN702	1-565-249-11	SOCKET, CONNECTOR				
CN703	1-506-483-21	PIN, CONNECTOR 4P				
* CN704	1-764-007-11	PIN, CONNECTOR (SMD) 12P				
* CN705	1-580-756-21	PIN, CONNECTOR (SMD) 7P				
< DIODE >						
D701	8-719-073-01	DIODE MA111-(K8).S0				
D702	8-719-073-01	DIODE MA111-(K8).S0				
D703	8-719-073-01	DIODE MA111-(K8).S0				
D704	8-719-073-01	DIODE MA111-(K8).S0				
< FERRITE BEAD >						
FB701	1-543-775-11	FERRITE	0UH			
FB702	1-543-775-11	FERRITE	0UH			
FB703	1-543-775-11	FERRITE	0UH			
FB704	1-543-775-11	FERRITE	0UH			
FB705	1-543-775-11	FERRITE	0UH			
FB706	1-543-775-11	FERRITE	0UH			
< IC >						
IC701	8-759-648-48	IC TC7W34FU(TE12R)				
IC702	8-759-111-56	IC uPC4572G2-E2				
IC703	8-759-111-56	IC uPC4572G2-E2				
IC705	8-759-603-27	IC M5201FP-600D				
IC706	8-759-075-66	IC TA75S01F(TE85R)				
IC707	8-759-111-56	IC uPC4572G2-E2				
< COIL >						
L701	1-414-398-11	INDUCTOR	10uH			
L702	1-414-398-11	INDUCTOR	10uH			
L703	1-414-398-11	INDUCTOR	10uH			
L704	1-414-854-11	INDUCTOR	1MH			

ME-019

MS-058

NO-001

ON-001

PD-126

Ref. No.	Part No.	Description	Remarks			
< TRANSISTOR >						
Q704	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO			
Q705	8-729-037-71	TRANSISTOR	UN9210J-(TX).SO			
Q706	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO			
< RESISTOR >						
R241	1-216-864-11	METAL CHIP	0	5%	1/16W	
R701	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R702	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R703	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R704	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R705	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R706	1-216-809-11	METAL CHIP	100	5%	1/16W	
R707	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R708	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R709	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R710	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R711	1-216-037-00	METAL CHIP	330	5%	1/10W	
R712	1-216-037-00	METAL CHIP	330	5%	1/10W	
R713	1-216-295-11	SHORT	0			
R714	1-216-035-00	METAL CHIP	270	5%	1/10W	
R715	1-216-035-00	METAL CHIP	270	5%	1/10W	
R716	1-216-864-11	METAL CHIP	0	5%	1/16W	
R718	1-220-222-11	RES-CHIP	4.7K	5%	1/2W	
R719	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R720	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R721	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R722	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R723	1-218-863-11	METAL CHIP	4.7K	0.5%	1/16W	
R724	1-218-863-11	METAL CHIP	4.7K	0.5%	1/16W	
R725	1-218-897-11	METAL CHIP	120K	0.5%	1/16W	
R728	1-218-829-11	METAL CHIP	180	0.5%	1/16W	
R729	1-216-971-11	METAL CHIP	12	5%	1/16W	
R730	1-218-887-11	METAL CHIP	47K	0.5%	1/16W	
R731	1-218-863-11	METAL CHIP	4.7K	0.5%	1/16W	
R732	1-218-885-11	METAL CHIP	39K	0.5%	1/16W	
R733	1-218-863-11	METAL CHIP	4.7K	0.5%	1/16W	
R734	1-218-863-11	METAL CHIP	4.7K	0.5%	1/16W	
R735	1-218-863-11	METAL CHIP	4.7K	0.5%	1/16W	
R736	1-218-863-11	METAL CHIP	4.7K	0.5%	1/16W	
R748	1-216-864-11	METAL CHIP	0	5%	1/16W	
R749	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R750	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R751	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R753	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R754	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R755	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R756	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R757	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R758	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R759	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R760	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R761	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R762	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R763	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R764	1-218-887-11	METAL CHIP	47K	0.5%	1/16W	

Ref. No.	Part No.	Description	Remarks			
R765	1-218-887-11	METAL CHIP	47K	0.5%	1/16W	
R766	1-218-887-11	METAL CHIP	47K	0.5%	1/16W	
R767	1-218-887-11	METAL CHIP	47K	0.5%	1/16W	
R768	1-218-911-11	METAL CHIP	470K	0.5%	1/16W	
R770	1-216-864-11	METAL CHIP	0	5%	1/16W	
R778	1-211-990-11	METAL CHIP	75	0.5%	1/16W	
R779	1-218-845-11	METAL CHIP	820	0.5%	1/16W	

A-7074-539-A MS-058 BOARD, COMPLETE

(Ref.No.;2000Series)

< CONNECTOR >

CN011	1-779-329-11	CONNECTOR, FFC/FPC 10P				
CN012	1-793-641-11	CONNECTOR, MEMORY STICK				

< DIODE >

D011	8-719-061-82	DIODE TLSU1002(TPX1,SONY)				
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< RESISTOR >

R012	1-216-818-11	METAL CHIP	560	5%	1/16W	
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A-7074-533-A NO-001 BOARD, COMPLETE

(Ref.No.;1000Series)

< CONNECTOR >

CN421	1-784-423-21	CONNECTOR, FFC/FPC (ZIF) 39P				
CN422	1-784-423-21	CONNECTOR, FFC/FPC (ZIF) 39P				

A-7074-534-A ON-001 BOARD, COMPLETE

(Ref.No.;10000Series)

< CONNECTOR >

CN2001	1-784-421-11	CONNECTOR, FFC/FPC (ZIF) 27P				
CN2002	1-784-421-11	CONNECTOR, FFC/FPC (ZIF) 27P				

A-7096-158-A PD-126 BOARD, COMPLETE

(Ref.No.;10000Series)

< CAPACITOR >

C2101	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V	
C2102	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C2103	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	
C2104	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V	
C2105	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C2107	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C2108	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	
C2109	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	
C2110	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	
C2111	1-164-739-11	CERAMIC CHIP	560PF	5%	50V	
C2112	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V	
C2113	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V	
C2114	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	
C2115	1-107-687-11	TANTAL. CHIP	3.3uF	20%	20V	
C2116	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V	

Ref. No.	Part No.	Description	Remarks
C2117	1-164-874-11	CERAMIC CHIP 100PF 5%	16V
C2118	1-125-838-11	CERAMIC CHIP 2.2uF 10%	6.3V
C2119	1-125-838-11	CERAMIC CHIP 2.2uF 10%	6.3V
C2120	1-125-838-11	CERAMIC CHIP 2.2uF 10%	6.3V
C2123	1-107-687-11	TANTAL. CHIP 3.3uF 20%	20V
C2124	1-164-943-11	CERAMIC CHIP 0.01uF 10%	16V
C2125	1-163-021-91	CERAMIC CHIP 0.01uF 10%	50V
C2126	1-115-566-11	CERAMIC CHIP 4.7uF 10%	10V
C2127	1-125-777-11	CERAMIC CHIP 0.1uF 10%	10V
C2128	1-107-725-11	CERAMIC CHIP 0.1uF 10%	16V
C2129	1-216-295-11	SHORT 0	(Note)
C2130	1-164-943-11	CERAMIC CHIP 0.01uF 10%	16V
C2133	1-109-982-11	CERAMIC CHIP 1uF 10%	10V
C2181	1-119-751-11	TANTAL. CHIP 22uF 20%	16V
C2182	1-164-943-11	CERAMIC CHIP 0.01uF 10%	16V
C2183	1-119-751-11	TANTAL. CHIP 22uF 20%	16V
C2184	1-164-943-11	CERAMIC CHIP 0.01uF 10%	16V
C2185	1-104-851-11	TANTAL. CHIP 10uF 20%	10V
C2186	1-125-777-11	CERAMIC CHIP 0.1uF 10%	10V

< CONNECTOR >

CN2100	1-794-378-21	PIN, CONNECTOR 14P
CN2101	1-794-377-21	PIN, CONNECTOR 8P
* CN2103	1-778-155-11	CONNECTOR, FFC/FPC (ZIF) 7P
* CN2104	1-778-172-11	CONNECTOR, FFC/FPC (ZIF) 24P
CN2105	1-764-704-21	CONNECTOR, FFC/FPC (LIF) 5P

< DIODE >

D2101	8-719-073-01	DIODE MA111-TX
D2102	8-713-102-80	DIODE 1T369-01-T8A
D2104	8-719-050-42	DIODE RD3.3UM-T1B
D2181	8-719-059-47	DIODE PG1111R-TR

< IC >

IC2101	8-759-660-93	IC RB5P004AM1
IC2103	8-752-403-84	IC CXD3505R-T4

< COIL >

L2101	1-414-755-11	INDUCTOR 22uH
L2102	1-414-754-11	INDUCTOR 10uH
L2103	1-414-754-11	INDUCTOR 10uH
L2104	1-410-998-31	INDUCTOR 2.7uH
L2181	1-412-056-11	INDUCTOR 4.7uH
L2182	1-414-757-11	INDUCTOR 100uH

< TRANSISTOR >

Q2101	8-729-427-74	TRANSISTOR XP4601-TXE
Q2102	8-729-037-74	TRANSISTOR UN9213J-(TX).SO
Q2103	8-729-427-74	TRANSISTOR XP4601-TXE
Q2104	8-729-041-23	TRANSISTOR NDS356AP
Q2109	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO
Q2111	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO
Q2112	8-729-048-77	TRANSISTOR XP4313-(TX).SO
Q2181	8-729-042-72	TRANSISTOR UN9214J-(K8).SO
Q2182	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)
Q2183	8-729-042-59	TRANSISTOR UN9112J-(K8).SO

Ref. No.	Part No.	Description	Remarks
< RESISTOR >			
R2111	1-218-985-11	RES-CHIP 470K 5%	1/16W
R2112	1-218-985-11	RES-CHIP 470K 5%	1/16W
R2113	1-218-990-11	SHORT 0	
R2114	1-218-967-11	RES-CHIP 15K 5%	1/16W
R2115	1-218-958-11	RES-CHIP 2.7K 5%	1/16W
R2116	1-218-973-11	RES-CHIP 47K 5%	1/16W
R2117	1-218-975-11	RES-CHIP 68K 5%	1/16W
R2118	1-218-969-11	RES-CHIP 22K 5%	1/16W
R2119	1-218-975-11	RES-CHIP 68K 5%	1/16W
R2122	1-218-989-11	RES-CHIP 1M 5%	1/16W
R2123	1-218-990-11	SHORT 0	
R2124	1-218-977-11	RES-CHIP 100K 5%	1/16W
R2129	1-218-990-11	SHORT 0	
R2134	1-218-929-11	RES-CHIP 10 5%	1/16W
R2136	1-218-929-11	RES-CHIP 10 5%	1/16W
R2137	1-218-929-11	RES-CHIP 10 5%	1/16W
R2138	1-218-941-11	RES-CHIP 100 5%	1/16W
R2143	1-218-965-11	RES-CHIP 10K 5%	1/16W
R2144	1-218-985-11	RES-CHIP 470K 5%	1/16W
R2146	1-218-990-11	SHORT 0	
R2147	1-218-990-11	SHORT 0	
R2148	1-218-965-11	RES-CHIP 10K 5%	1/16W
R2153	1-218-990-11	SHORT 0	
R2157	1-218-989-11	RES-CHIP 1M 5%	1/16W
R2158	1-218-975-11	RES-CHIP 68K 5%	1/16W
R2159	1-218-979-11	RES-CHIP 150K 5%	1/16W
R2160	1-218-988-11	RES-CHIP 820K 5%	1/16W
R2162	1-218-990-11	SHORT 0	
R2163	1-218-990-11	SHORT 0	
R2165	1-218-990-11	SHORT 0	
R2166	1-218-965-11	RES-CHIP 10K 5%	1/16W
R2168	1-218-990-11	SHORT 0	
R2169	1-218-990-11	SHORT 0	
R2170	1-218-977-11	RES-CHIP 100K 5%	1/16W
R2172	1-218-990-11	SHORT 0	
R2173	1-218-990-11	SHORT 0	
R2174	1-218-990-11	SHORT 0	
R2175	1-218-990-11	SHORT 0	
R2176	1-218-990-11	SHORT 0	
R2177	1-218-977-11	RES-CHIP 100K 5%	1/16W
R2178	1-218-977-11	RES-CHIP 100K 5%	1/16W
R2179	1-218-977-11	RES-CHIP 100K 5%	1/16W
R2180	1-218-977-11	RES-CHIP 100K 5%	1/16W
R2181	1-218-961-11	RES-CHIP 4.7K 5%	1/16W
R2182	1-218-953-11	RES-CHIP 1K 5%	1/16W
R2183	1-218-941-11	RES-CHIP 100 5%	1/16W
R2184	1-218-990-11	SHORT 0	

A-7074-540-A PM-040 BOARD, COMPLETE

(Ref.No.;1000Series)

< CONNECTOR >

CN081	1-778-507-21	PIN, CONNECTOR (PC BOARD) 4P
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Note: Resistor is mounted to the location where C2129 is printed.

Ref. No.	Part No.	Description	Remarks
		< DIODE >	
D081	8-719-064-61	DIODE 01BZA8.2(TE85L)	
D082	8-719-064-61	DIODE 01BZA8.2(TE85L)	
		< SWITCH >	
S081	1-570-985-11	SWITCH, TOGGLE (MODE)	
S082	1-570-984-11	SWITCH, TOGGLE (POWER)	
A-7074-549-A RL-057 BOARD, COMPLETE			

(Ref.No.:1000Series)			
		< CONNECTOR >	
CN141	1-569-775-11	PIN, CONNECTOR (SMD) 5P	
		< DIODE >	
D141	8-719-072-91	DIODE MAZJ200D0LS0	
D142	8-719-062-16	DIODE 01ZA8.2(TPL3)	
D143	8-719-422-70	DIODE MA8075-TX	
		< JACK >	
J141	1-793-995-11	JACK, SUPER SMALL TYPE (LANC)	
		< RESISTOR >	
R141	1-216-864-11	METAL CHIP 0 5% 1/16W	
R142	1-216-864-11	METAL CHIP 0 5% 1/16W	
R143	1-216-864-11	METAL CHIP 0 5% 1/16W	
R144	1-216-817-11	METAL CHIP 470 5% 1/16W	
R145	1-216-864-11	METAL CHIP 0 5% 1/16W	
R146	1-216-864-11	METAL CHIP 0 5% 1/16W	
A-7074-536-A SB-036 BOARD, COMPLETE			

(Ref.No.:1000Series)			
		< CONNECTOR >	
CN061	1-691-371-21	CONNECTOR, FFC/FPC 7P	
		< DIODE >	
D061	8-719-064-61	DIODE 01BZA8.2(TE85L)	
D062	8-719-064-61	DIODE 01BZA8.2(TE85L)	
		< RESISTOR >	
R061	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R062	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R063	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R064	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R065	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
		< SWITCH >	
S061	1-572-342-11	SWITCH, SLIDE (ZEBRA)	
S062	1-572-272-11	SWITCH, SLIDE (ATW ON/OFF)	
S063	1-572-272-11	SWITCH, SLIDE (AUTO ON/OFF)	
S064	1-572-272-11	SWITCH, SLIDE (AGC ON/OFF)	
S065	1-572-078-11	SWITCH, TACTILE (AUDIO LEVEL)	

Ref. No.	Part No.	Description	Remarks
S066	1-572-078-11	SWITCH, TACTILE (DISPLAY)	
S067	1-572-078-11	SWITCH, TACTILE (SPOT LIGHT)	
S068	1-572-078-11	SWITCH, TACTILE (BACK LIGHT)	
A-7074-532-A SE-116 BOARD, COMPLETE			

(Ref.No.:1000Series)			
		< CAPACITOR >	
C600	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C601	1-127-895-91	TANTAL. CHIP 22uF 20% 4V	
		< CONNECTOR >	
CN600	1-766-336-21	CONNECTOR, FFC/FPC 6P	
		< FERRITE BEAD >	
FB601	1-414-385-21	FERRITE 0UH	
FB602	1-414-385-21	FERRITE 0UH	
FB603	1-414-385-21	FERRITE 0UH	
FB604	1-414-385-21	FERRITE 0UH	
FB605	1-414-385-21	FERRITE 0UH	
FB606	1-414-385-21	FERRITE 0UH	
		< COIL >	
L600	1-414-754-11	INDUCTOR 10uH	
		< SENSOR >	
SE600	1-803-042-31	SENSOR, ANGULAR VELOCITY (YAW)	
SE601	1-803-042-41	SENSOR, ANGULAR VELOCITY (PITCH)	
A-7074-535-A SW-343 BOARD, COMPLETE			

(Ref.No.:2000Series)			
		< BATTERY >	
BT501	1-528-724-21	BATTERY, V/L RICHARGEABL	
		< CAPACITOR >	
C501	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
		< CONNECTOR >	
CN502	1-750-345-11	CONNECTOR, FFC/EPC (ZIF) 30P	
CN503	1-778-506-21	PIN, CONNECTOR (PC BOARD) 2P	
CN504	1-778-508-21	PIN, CONNECTOR (PC BOARD) 6P	
CN505	1-794-377-21	PIN, CONNECTOR 8P	
CN506	1-750-345-11	CONNECTOR, FFC/EPC (ZIF) 30P	
CN507	1-794-378-21	PIN, CONNECTOR 14P	
CN508	1-691-371-21	CONNECTOR, FFC/FPC 7P	
CN509	1-793-302-21	PIN, CONNECTOR (PC BOARD) 5P	
CN511	1-778-507-21	PIN, CONNECTOR (PC BOARD) 4P	
CN512	1-573-346-21	CONNECTOR, FFC/FPC 6P	

Ref. No.	Part No.	Description	Remarks
< DIODE >			
D101	8-719-064-61	DIODE 01BZA8.2(TE85L)	
D501	8-719-064-61	DIODE 01BZA8.2(TE85L)	
D502	8-719-064-61	DIODE 01BZA8.2(TE85L)	
D503	8-719-064-61	DIODE 01BZA8.2(TE85L)	
D504	8-719-064-61	DIODE 01BZA8.2(TE85L)	
D505	8-719-064-61	DIODE 01BZA8.2(TE85L)	
D506	8-719-064-61	DIODE 01BZA8.2(TE85L)	
D507	8-719-073-03	DIODE MA8082-(K8).S0	
D508	8-719-064-61	DIODE 01BZA8.2(TE85L)	
< IC >			
IC501	8-759-664-85	IC TC3W02FU(TE12R)	
< TRANSISTOR >			
Q001	8-729-427-74	TRANSISTOR XP4601-TXE	
< RESISTOR >			
R101	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R102	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R103	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R104	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R105	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R501	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R502	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R503	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R505	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R506	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R507	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R508	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R509	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R510	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R511	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R512	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R513	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R514	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R517	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R518	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R519	1-218-871-11	METAL CHIP 10K 0.5% 1/16W	
R520	1-218-869-11	METAL CHIP 8.2K 0.5% 1/16W	
R521	1-164-937-11	CERAMIC CHIP 0.001uF 10% 16V	(Note)
< VARIABLE RESISTOR >			
RV501	1-223-649-11	RES, VAR, CARBON 20K (CH-1 AUDIO LEVEL)	
RV502	1-223-649-11	RES, VAR, CARBON 20K (CH-2 AUDIO LEVEL)	
RV503	1-223-649-11	RES, VAR, CARBON 20K (MONITOR)	
< SWITCH >			
S501	1-570-860-11	SWITCH, SLIDE (CH-1 AUDIO SELECT)	
S502	1-570-860-11	SWITCH, SLIDE (CH-2 AUDIO SELECT)	
S503	1-570-860-11	SWITCH, SLIDE (CH-1 AUDIO INPUT)	
S504	1-570-860-11	SWITCH, SLIDE (CH-2 AUDIO INPUT)	
S505	1-570-852-11	SWITCH, SLIDE (AUDIO MONITOR)	
S506	1-570-860-11	SWITCH, SLIDE (DISPLAY SELECT)	
S507	1-572-078-11	SWITCH, TACTILE (MEMORY MIX)	
S508	1-572-078-11	SWITCH, TACTILE (MEMORY INDEX)	
S509	1-572-078-11	SWITCH, TACTILE (MEMORY+)	
S510	1-572-078-11	SWITCH, TACTILE (DATA CODE)	

Note : Capacitor is mounted to the location where R521 is printed.

Ref. No.	Part No.	Description	Remarks
S511	1-572-078-11	SWITCH, TACTILE (RESET)	
S512	1-572-078-11	SWITCH, TACTILE (MEMORY-)	
S513	1-572-078-11	SWITCH, TACTILE (END SEARCH)	
S514	1-572-078-11	SWITCH, TACTILE (MEMORY DELETE)	
S515	1-572-078-11	SWITCH, TACTILE (TITLE)	
S516	1-572-078-11	SWITCH, TACTILE (MEMORY PLAY)	
S517	1-572-078-11	SWITCH, TACTILE (DIGITAL EFFECT)	
S518	1-572-078-11	SWITCH, TACTILE (LCD BRIGHT+)	
S519	1-572-078-11	SWITCH, TACTILE (LCD BRIGHT-)	
S520	1-572-272-11	SWITCH, SLIDE (LCD ON/OFF)	
A-7074-543-A TH-010 BOARD, COMPLETE			

(Ref.No.;1000Series)			
< CAPACITOR >			
C451	1-104-851-11	TANTAL. CHIP 10uF 20% 10V	
< CONNECTOR >			
CN451	1-793-302-21	PIN, CONNECTOR (PC BOARD) 5P	
< DIODE >			
D451	8-719-071-31	DIODE SLI-342URC3F	
D452	8-719-071-31	DIODE SLI-342URC3F	
D453	8-719-064-61	DIODE 01BZA8.2(TE85L)	
D454	8-719-064-61	DIODE 01BZA8.2(TE85L)	
< IC >			
IC451	8-749-013-13	IC RS-70-TU	
< TRANSISTOR >			
Q451	8-729-037-71	TRANSISTOR UN9210J-(TX).S0	
< RESISTOR >			
R451	1-216-820-11	METAL CHIP 820 5% 1/16W	
R452	1-216-820-11	METAL CHIP 820 5% 1/16W	
R453	1-216-805-11	METAL CHIP 47 5% 1/16W	
R454	1-216-864-11	METAL CHIP 0 5% 1/16W	
< SWITCH >			
S451	1-570-608-11	SWITCH, TOGGLE (TALLY ON/OFF)	
A-7096-400-A VI-156 BOARD, COMPLETE (SERVICE)			

(Ref.No.;10000Series)			
< CAPACITOR >			
C051	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C052	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C053	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C054	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C102	1-164-943-11	CERAMIC CHIP 0.01uF 10% 16V	
C103	1-164-943-11	CERAMIC CHIP 0.01uF 10% 16V	
C104	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V	
C105	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	
C106	1-164-943-11	CERAMIC CHIP 0.01uF 10% 16V	
C107	1-127-895-95	TANTAL. CHIP 22uF 10% 4V	

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks
C108	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C312	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C109	1-104-851-11	TANTAL. CHIP	10uF	20%	10V	C313	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C110	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C314	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C111	1-164-935-11	CERAMIC CHIP	470PF	10%	16V	C315	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C112	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C316	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C113	1-164-866-11	CERAMIC CHIP	47PF	5%	16V	C317	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C114	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C318	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C115	1-164-935-11	CERAMIC CHIP	470PF	10%	16V	C319	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C116	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V	C320	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C117	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C321	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C118	1-164-866-11	CERAMIC CHIP	47PF	5%	16V	C322	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C119	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C323	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C120	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C324	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C121	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C325	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C122	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C326	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C123	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C327	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C124	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C328	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C125	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C329	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C127	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C331	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C128	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C332	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C140	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C333	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C141	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C334	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C142	1-164-941-11	CERAMIC CHIP	0.0047uF	10%	16V	C335	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C143	1-115-156-11	CERAMIC CHIP	1uF	10V		C337	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C145	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C338	1-164-882-11	CERAMIC CHIP	220PF	5%	16V
C146	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C342	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C147	1-164-935-11	CERAMIC CHIP	470PF	10%	16V	C343	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C148	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V	C345	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C149	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V	C346	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C150	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V	C348	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C151	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C352	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C152	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C353	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C153	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	16V	C354	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C154	1-104-851-11	TANTAL. CHIP	10uF	20%	10V	C501	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C155	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C502	1-164-850-11	CERAMIC CHIP	10PF	0.50PF	16V
C156	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C503	1-164-850-11	CERAMIC CHIP	10PF	0.50PF	16V
C157	1-127-895-91	TANTAL. CHIP	22uF	20%	4V	C504	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C158	1-127-895-91	TANTAL. CHIP	22uF	20%	4V	C505	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C159	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C506	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C160	1-164-866-11	CERAMIC CHIP	47PF	5%	16V	C507	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C161	1-164-866-11	CERAMIC CHIP	47PF	5%	16V	C508	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C162	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V	C509	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C163	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V	C510	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C166	1-127-895-91	TANTAL. CHIP	22uF	20%	4V	C511	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C170	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C512	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C171	1-164-935-11	CERAMIC CHIP	470PF	10%	16V	C513	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C172	1-164-935-11	CERAMIC CHIP	470PF	10%	16V	C514	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C173	1-164-935-11	CERAMIC CHIP	470PF	10%	16V	C515	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C174	1-164-935-11	CERAMIC CHIP	470PF	10%	16V	C516	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C301	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C701	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C302	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C702	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C303	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C703	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C304	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C704	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C305	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C705	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C306	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C706	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C307	1-164-850-11	CERAMIC CHIP	10PF	0.50PF	16V	C707	1-113-682-11	TANTAL. CHIP	33uF	20%	10V
C308	1-164-850-11	CERAMIC CHIP	10PF	0.50PF	16V	C708	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C309	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C709	1-107-689-21	TANTAL. CHIP	1uF	20%	35V
C310	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V	C710	1-107-689-21	TANTAL. CHIP	1uF	20%	35V
C311	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C711	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V

Ref. No.	Part No.	Description			Remarks
C712	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C713	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C714	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C715	1-113-981-11	TANTAL. CHIP	22uF	20%	20V
C716	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C717	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C718	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C720	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C721	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C722	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C723	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C724	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C725	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C726	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C727	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C728	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C729	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C732	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C733	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C734	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C735	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C736	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C737	1-119-749-11	TANTAL. CHIP	33uF	20%	4V
C740	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C743	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C744	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C745	1-164-844-11	CERAMIC CHIP	4PF	5%	16V
C746	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C747	1-164-850-11	CERAMIC CHIP	10PF	0.50PF	16V
C748	1-164-850-11	CERAMIC CHIP	10PF	0.50PF	16V
C749	1-164-850-11	CERAMIC CHIP	10PF	0.50PF	16V
C750	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C751	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C752	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C753	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C754	1-128-964-91	TANTAL. CHIP	100uF	20%	6.3V
C755	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C757	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C758	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C759	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C760	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C761	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C762	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C763	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C771	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C772	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C801	1-127-895-95	TANTAL. CHIP	22uF	10%	4V
C802	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C803	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C805	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C806	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C807	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C808	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C809	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C810	1-127-895-95	TANTAL. CHIP	22uF	10%	4V
C811	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C901	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C902	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C903	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C904	1-104-851-11	TANTAL. CHIP	10uF	20%	10V

Ref. No.	Part No.	Description			Remarks
C908	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C910	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C911	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C912	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C913	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C914	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C915	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C916	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C917	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C918	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C919	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C920	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C921	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C922	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C926	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C928	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C929	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C930	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C931	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C932	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C933	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C934	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C935	1-164-858-11	CERAMIC CHIP	22PF	5%	16V
C936	1-164-866-11	CERAMIC CHIP	47PF	5%	16V
C1002	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C1003	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C1005	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C1006	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C1007	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C1008	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C1009	1-109-935-11	TANTAL. CHIP	4.7uF	20%	6.3V
C1010	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1011	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C1013	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1014	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1015	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C1017	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1018	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1019	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1020	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C1021	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1022	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C1023	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C1024	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1025	1-164-860-11	CERAMIC CHIP	27PF	5%	16V
C1026	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C1027	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C1028	1-113-994-11	TANTAL. CHIP	6.8uF	20%	16V
C1029	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C1034	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C1035	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C1037	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1038	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C1039	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C1040	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1041	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C1042	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C1044	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C1045	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C1047	1-164-942-11	CERAMIC CHIP	0.0068uF	10%	16V

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks
C1048	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V	C1114	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C1049	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V	C1115	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C1050	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V	C1116	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C1051	1-104-851-11	TANTAL. CHIP	10uF	20%	10V	C1117	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C1052	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V	C1119	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C1053	1-109-935-11	TANTAL. CHIP	4.7uF	20%	4V	C1120	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C1054	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V	C1121	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C1055	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V	C1122	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C1056	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V	C1128	1-164-858-11	CERAMIC CHIP	22PF	5%	16V
C1058	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V	C1129	1-164-858-11	CERAMIC CHIP	22PF	5%	16V
C1060	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V	C1130	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1061	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V	C1131	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C1062	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V	C1132	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C1065	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V	C1133	1-110-569-11	TANTAL. CHIP	47uF		6.3V
C1066	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C1134	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1067	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C1301	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C1068	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V	C1302	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C1069	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C1303	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C1070	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C1304	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C1071	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V	C1305	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C1072	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V	C1306	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C1073	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V	C1307	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C1074	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V	C1308	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C1075	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V	C1309	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C1076	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V	C1310	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C1077	1-164-942-11	CERAMIC CHIP	0.0068uF	10%	16V	C1311	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C1078	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V	C1312	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C1080	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C1313	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C1082	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V	C1314	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C1083	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C1315	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C1084	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C1316	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C1085	1-104-851-11	TANTAL. CHIP	10uF	20%	10V	C1318	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C1086	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C1319	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C1087	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C1320	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C1088	1-104-851-11	TANTAL. CHIP	10uF	20%	10V	C1321	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C1089	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C1322	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1090	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C1328	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C1091	1-109-935-11	TANTAL. CHIP	4.7uF	20%	6.3V	C1329	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C1092	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C1330	1-127-569-91	TANTAL. CHIP	100uF	20%	4V
C1093	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C1332	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C1094	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C1337	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C1095	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C1338	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C1096	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C1340	1-127-569-91	TANTAL. CHIP	100uF	20%	4V
C1097	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C1341	1-127-569-91	TANTAL. CHIP	100uF	20%	4V
C1098	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V	C1342	1-127-569-91	TANTAL. CHIP	100uF	20%	4V
C1099	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V	C1343	1-164-858-11	CERAMIC CHIP	22PF	5%	16V
C1100	1-104-913-11	TANTAL. CHIP	10uF	20%	16V	C1401	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1101	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C1402	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C1102	1-115-156-11	CERAMIC CHIP	1uF		10V	C1403	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C1103	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	C1404	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C1104	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C1405	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C1105	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C1406	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C1106	1-104-851-11	TANTAL. CHIP	10uF	20%	10V	C1407	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1107	1-119-749-11	TANTAL. CHIP	33uF	20%	4V	C1408	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1108	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C1409	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C1109	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C1410	1-164-315-11	CERAMIC CHIP	470PF	2.00%	50V
C1110	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C1411	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1111	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C1412	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1112	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C1413	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1113	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C1414	1-164-360-11	CERAMIC CHIP	0.1uF		16V

Ref. No.	Part No.	Description	Remarks			Ref. No.	Part No.	Description	Remarks		
C1415	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C2513	1-127-569-91	TANTAL. CHIP	100uF	20%	4V
C1416	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V	C2770	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1417	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C2771	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1418	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V	C2772	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1419	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V	C2773	1-164-942-11	CERAMIC CHIP	0.0068uF	10%	16V
C1420	1-164-850-11	CERAMIC CHIP	10PF	0.50PF	16V	C2774	1-164-942-11	CERAMIC CHIP	0.0068uF	10%	16V
C1421	1-164-850-11	CERAMIC CHIP	10PF	0.50PF	16V	C2775	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C1422	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C2776	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C1423	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V	C2777	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C1424	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C2778	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1425	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V	C2779	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V
C1426	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C2780	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1427	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C2785	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C1428	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V	C2786	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C1601	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V	C2787	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C1602	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V	C2788	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C1603	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V	C2789	1-164-940-11	CERAMIC CHIP	0.0033uF	10%	16V
C1604	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V	C2790	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C1605	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V	C2791	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C1606	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V	C2792	1-164-940-11	CERAMIC CHIP	0.0033uF	10%	16V
C1607	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V	C2793	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C1608	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V	C2794	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C1609	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V	C2796	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1610	1-113-642-11	TANTAL. CHIP	47uF	20%	10V	C2797	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C1611	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V	C2798	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C1612	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V	C2799	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C1615	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V	C2800	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C1616	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V	C2821	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C1619	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V	C3301	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1620	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V	C3302	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C1621	1-113-994-11	TANTAL. CHIP	6.8uF	20%	16V	C3303	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C1622	1-113-994-11	TANTAL. CHIP	6.8uF	20%	16V	C3306	1-107-725-11	CERAMIC CHIP	0.1uF	10%	16V
C1623	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V	C3307	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1624	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V	C3308	1-104-913-11	TANTAL. CHIP	10uF	20%	16V
C1625	1-104-851-11	TANTAL. CHIP	10uF	20%	10V	C3309	1-164-874-11	CERAMIC CHIP	100PF	5%	16V
C1626	1-104-851-11	TANTAL. CHIP	10uF	20%	10V	C3310	1-104-913-11	TANTAL. CHIP	10uF	20%	16V
C2200	1-127-895-91	TANTAL. CHIP	22uF	20%	4V	C3311	1-164-935-11	CERAMIC CHIP	470PF	10%	16V
C2201	1-127-895-91	TANTAL. CHIP	22uF	20%	4V	C3312	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V
C2202	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V	C3313	1-104-913-11	TANTAL. CHIP	10uF	20%	16V
C2203	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V	C3314	1-119-751-11	TANTAL. CHIP	22uF	20%	16V
C2204	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V	C3315	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C2205	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V	C3316	1-119-751-11	TANTAL. CHIP	22uF	20%	16V
C2206	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V	C3317	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	16V
C2207	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V	C3318	1-164-935-11	CERAMIC CHIP	470PF	10%	16V
C2208	1-110-569-11	TANTAL. CHIP	47uF	20%	4V	C3319	1-164-937-11	CERAMIC CHIP	0.001uF	10%	16V
C2209	1-110-569-11	TANTAL. CHIP	47uF	20%	4V	C3320	1-164-933-11	CERAMIC CHIP	220PF	10%	16V
C2210	1-110-569-11	TANTAL. CHIP	47uF	20%	4V	C3321	1-164-874-11	CERAMIC CHIP	100PF	5%	16V
C2211	1-110-569-11	TANTAL. CHIP	47uF	20%	4V	C3322	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C2214	1-127-895-91	TANTAL. CHIP	22uF	20%	4V	C3323	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C2215	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C3324	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C2501	1-127-569-91	TANTAL. CHIP	100uF	20%	4V	C3325	1-164-940-11	CERAMIC CHIP	0.0033uF	10%	16V
C2502	1-127-569-91	TANTAL. CHIP	100uF	20%	4V	C3326	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C2503	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V	C3327	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	16V
C2504	1-107-686-11	TANTAL. CHIP	4.7uF	20%	16V	C3328	1-164-940-11	CERAMIC CHIP	0.0033uF	10%	16V
C2505	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	C3330	1-164-940-11	CERAMIC CHIP	0.0033uF	10%	16V
C2506	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	C3332	1-164-940-11	CERAMIC CHIP	0.0033uF	10%	16V
C2507	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	C3333	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C2508	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	C3335	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C2509	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C3336	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C2512	1-127-569-91	TANTAL. CHIP	100uF	20%	4V	C3337	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks
C3338	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C4136	1-113-985-11	TANTAL. CHIP	10uF	20%	20V
C3339	1-104-851-11	TANTAL. CHIP	10uF	20%	10V	C4137	1-104-913-11	TANTAL. CHIP	10uF	20%	16V
C3342	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V	C4200	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C3343	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V	C4201	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C3344	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V	C4202	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C3345	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V	C4203	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C3346	1-127-820-11	CERAMIC	4.7uF		16V	C4204	1-113-987-11	TANTAL. CHIP	4.7uF	20%	25V
C3347	1-164-505-11	CERAMIC CHIP	2.2uF		16V	C4205	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C3349	1-127-820-11	CERAMIC	4.7uF		16V	C4206	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C3350	1-113-985-11	TANTAL. CHIP	10uF	20%	20V	C4207	1-107-686-11	TANTAL. CHIP	4.7uF	20%	16V
C3351	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V	C4208	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C3352	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V	C4300	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C3353	1-104-851-11	TANTAL. CHIP	10uF	20%	10V	C4301	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C3354	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C4302	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C3355	1-104-851-11	TANTAL. CHIP	10uF	20%	10V	C4303	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C3356	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V	C4320	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C3357	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V	C4321	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C3358	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V	C4322	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C3359	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C4323	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C3360	1-104-851-11	TANTAL. CHIP	10uF	20%	10V	C4324	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C3361	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V	C4325	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C3363	1-104-851-11	TANTAL. CHIP	10uF	20%	10V	C4326	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C3364	1-135-214-21	TANTAL. CHIP	4.7uF	20%	20V	C4327	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C3365	1-113-987-11	TANTAL. CHIP	4.7uF	20%	25V	C4329	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C3366	1-113-985-11	TANTAL. CHIP	10uF	20%	20V	C4330	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C3367	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	C4331	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C3368	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	C4400	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C3370	1-164-505-11	CERAMIC CHIP	2.2uF		16V	C4401	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C3371	1-113-985-11	TANTAL. CHIP	10uF	20%	20V	C4402	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C3373	1-104-851-11	TANTAL. CHIP	10uF	20%	10V	C4403	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C3375	1-113-985-11	TANTAL. CHIP	10uF	20%	20V	C4404	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C3376	1-104-913-11	TANTAL. CHIP	10uF	20%	16V	C4405	1-107-686-11	TANTAL. CHIP	4.7uF	20%	16V
C3377	1-135-212-21	TANTAL. CHIP	2.2uF	20%	35V	C4406	1-107-686-11	TANTAL. CHIP	4.7uF	20%	16V
C3378	1-113-985-11	TANTAL. CHIP	10uF	20%	20V	C4407	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C3450	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V	C4501	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C4100	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C4502	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C4101	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C4503	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C4102	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C4504	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C4103	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C4505	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C4104	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V	C4506	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C4105	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C4507	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C4106	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V	C4508	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C4107	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C4509	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C4108	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	C4510	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C4109	1-164-739-11	CERAMIC CHIP	560PF	5%	50V	C4511	1-107-686-11	TANTAL. CHIP	4.7uF	20%	16V
C4111	1-164-230-11	CERAMIC CHIP	220PF	5%	50V	C4512	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C4112	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V	C4515	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C4113	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	C4518	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C4114	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	C4519	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C4115	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C4520	1-107-686-11	TANTAL. CHIP	4.7uF	20%	16V
C4116	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C4521	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C4117	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C4522	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C4118	1-164-156-11	CERAMIC CHIP	0.1uF		25V	C4523	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C4119	1-119-869-91	CERAMIC CHIP	OPF		0V	C4524	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C4129	1-119-869-91	CERAMIC CHIP	OPF		0V	C4525	1-107-686-11	TANTAL. CHIP	4.7uF	20%	16V
C4130	1-119-869-91	CERAMIC CHIP	OPF		0V	< CONNECTOR >					
C4131	1-119-869-91	CERAMIC CHIP	OPF		0V	CN001	1-784-423-21	CONNECTOR, FFC/FPC (ZIF) 39P			
C4132	1-119-869-91	CERAMIC CHIP	OPF		0V	CN002	1-784-421-11	CONNECTOR, FFC/FPC (ZIF) 27P			
C4134	1-104-913-11	TANTAL. CHIP	10uF	20%	16V	CN003	1-766-346-21	CONNECTOR, FFC/FPC 16P			
C4135	1-104-913-11	TANTAL. CHIP	10uF	20%	16V	CN004	1-778-508-21	PIN, CONNECTOR (PC BOARD) 6P			
						CN005	1-785-283-21	PIN, CONNECTOR (PC BOARD) 14P			

Ref. No.	Part No.	Description	Remarks
CN006	1-779-329-11	CONNECTOR, FFC/FPC 10P	
CN007	1-766-350-21	CONNECTOR, FFC/FPC 20P	
* CN008	1-580-056-21	PIN, CONNECTOR (SMD) 3P	
CN009	1-569-775-11	PIN, CONNECTOR (SMD) 5P	
* CN010	1-580-789-21	PIN, CONNECTOR (SMD) 6P	
* CN011	1-691-591-11	PIN, CONNECTOR (1.5MM) (SMD) 8P	
CN012	1-778-509-21	PIN, CONNECTOR (PC BOARD) 11P	
CN013	1-691-346-11	CONNECTOR, FFC/FPC 8P	
* CN016	1-764-007-11	PIN, CONNECTOR (SMD) 12P	
* CN017	1-580-756-21	PIN, CONNECTOR (SMD) 7P	
CN018	1-770-629-21	PIN, CONNECTOR 12P	
* CN019	1-793-137-21	PIN, CONNECTOR 3P	
CN020	1-779-327-11	CONNECTOR, FFC/FPC 6P	
CN021	1-778-507-21	PIN, CONNECTOR (PC BOARD) 4P	
* CN022	1-764-007-11	PIN, CONNECTOR (SMD) 12P	
CN025	1-778-083-21	CONNECTOR, BOARD TO BOARD 50P	
CN101	1-750-337-21	CONNECTOR, FFC/FPC (ZIF) 10P	
CN200	1-691-385-21	CONNECTOR, FFC/FPC 21P	
CN201	1-691-385-21	CONNECTOR, FFC/FPC 21P	
CN400	1-750-341-11	CONNECTOR, FFC/EPC (ZIF) 18P	
CN500	1-573-351-11	CONNECTOR, FFC/FPC (ZIF) 11P	
* CN501	1-580-055-21	PIN, CONNECTOR (SMD) 2P	
* CN4300	1-580-055-21	PIN, CONNECTOR (SMD) 2P	
< DIODE >			
D001	8-719-036-80	DIODE RD3.9SB-T1	
D140	8-719-056-23	DIODE MA2S111-(K8).SO	
D301	8-719-027-95	DIODE HSM88WK-TL	
D302	8-719-055-86	DIODE KV1470TL1-3	
D303	8-719-027-95	DIODE HSM88WK-TL	
D304	8-719-055-86	DIODE KV1470TL1-3	
D701	8-713-103-84	DIODE 1T379-01-T8A	
D702	8-719-046-91	DIODE MA2S111-TX	
D1104	8-719-421-27	DIODE MA728-(K8).SO	
D1106	8-719-073-01	DIODE MA111-(K8).SO	
D1112	8-719-067-56	DIODE MA112-TX	
D1113	8-719-067-56	DIODE MA112-TX	
D1114	8-719-067-56	DIODE MA112-TX	
D1115	8-719-067-56	DIODE MA112-TX	
D1116	8-719-067-56	DIODE MA112-TX	
D1117	8-719-067-56	DIODE MA112-TX	
D1401	8-719-056-23	DIODE MA2S111-(K8).SO	
D2501	8-719-073-01	DIODE MA111-(K8).SO	
D2502	8-719-073-01	DIODE MA111-(K8).SO	
D2503	8-719-073-01	DIODE MA111-(K8).SO	
D2504	8-719-073-01	DIODE MA111-(K8).SO	
D2770	8-719-064-61	DIODE 01BZA8.2(TE85L)	
D3305	8-719-058-24	DIODE RB501V-40TE-17	
D3306	8-719-058-24	DIODE RB501V-40TE-17	
D3307	8-719-058-24	DIODE RB501V-40TE-17	
D3308	8-719-056-48	DIODE 1SS388(TPL3)	
D3309	8-719-056-48	DIODE 1SS388(TPL3)	
D3310	8-719-056-48	DIODE 1SS388(TPL3)	
D3311	8-719-056-48	DIODE 1SS388(TPL3)	
D3312	8-719-056-48	DIODE 1SS388(TPL3)	
D4101	8-719-066-98	DIODE RB051L-40TE25	
D4102	8-719-066-98	DIODE RB051L-40TE25	
D4103	8-719-066-98	DIODE RB051L-40TE25	
D4104	8-719-066-98	DIODE RB051L-40TE25	

Ref. No.	Part No.	Description	Remarks
< FERRITE BEAD >			
FB101	1-414-760-21	FERRITE	OUH
FB140	1-414-445-11	FERRITE	OUH
FB301	1-414-760-21	FERRITE	OUH
FB302	1-414-760-21	FERRITE	OUH
FB303	1-414-760-21	FERRITE	OUH
FB304	1-414-760-21	FERRITE	OUH
FB305	1-414-760-21	FERRITE	OUH
FB306	1-414-760-21	FERRITE	OUH
FB307	1-414-760-21	FERRITE	OUH
FB501	1-414-760-21	FERRITE	OUH
FB701	1-414-445-11	FERRITE	OUH
FB702	1-414-445-11	FERRITE	OUH
FB703	1-414-445-11	FERRITE	OUH
FB704	1-500-284-21	INDUCTOR CHIP	OUH
FB705	1-414-445-11	FERRITE	OUH
FB706	1-414-445-11	FERRITE	OUH
FB707	1-414-445-11	FERRITE	OUH
FB708	1-469-537-21	FILTER, EMI	
FB709	1-469-537-21	FILTER, EMI	
FB710	1-469-537-21	FILTER, EMI	
FB711	1-469-537-21	FILTER, EMI	
FB712	1-469-537-21	FILTER, EMI	
FB713	1-469-537-21	FILTER, EMI	
FB771	1-414-445-11	FERRITE	OUH
FB772	1-414-445-11	FERRITE	OUH
FB901	1-414-760-21	FERRITE	OUH
FB1002	1-500-329-21	INDUCTOR CHIP	OUH
FB1101	1-500-329-21	INDUCTOR CHIP	OUH
FB1301	1-414-760-21	FERRITE	OUH
FB1401	1-543-955-22	FERRITE	OUH
FB1402	1-543-955-22	FERRITE	OUH
FB1403	1-543-960-22	FERRITE	OUH
FB1404	1-543-955-22	FERRITE	OUH
FB1405	1-543-955-22	FERRITE	OUH
FB1406	1-543-955-22	FERRITE	OUH
FB1407	1-543-955-22	FERRITE	OUH
FB1410	1-469-180-22	FERRITE	OUH
FB1411	1-469-180-22	FERRITE	OUH
FB1412	1-469-180-22	FERRITE	OUH
FB1413	1-469-180-22	FERRITE	OUH
< IC >			
IC051	8-759-524-20	IC TC74VHC165FT(EL)	
IC052	8-759-524-20	IC TC74VHC165FT(EL)	
IC053	8-759-242-70	IC TC7WU04F(TE12R)	
IC054	8-759-062-66	IC TC7S66F(TE85R)	
IC101	8-752-086-52	IC CXA2071R-T4	
IC102	8-752-086-53	IC CXA2072R-T4	
IC140	8-759-637-96	IC uPD16877MA-6A5-E2	
IC141	8-759-444-87	IC NJM324V(TE2)	
IC142	8-759-075-66	IC TA75S01F(TE85R)	
IC143	8-759-327-33	IC BU9241FS-E2	
IC144	8-759-327-33	IC BU9241FS-E2	
IC301	8-759-650-74	IC CAIN	
IC302	8-759-677-31	IC MB90099PFV-G-103-BND-ER	
IC361	8-759-566-52	IC SN104266PN-TEB	
IC501	8-759-693-44	IC MB91192PFF-G-120-BND	

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
IC502	8-759-593-47	IC AK6417AM-E2		IC3300	8-759-491-09	IC MB4488PFV-G-BND-ER	
IC503	8-759-443-08	IC TC7W241FU-TE12R		IC3301	8-759-364-52	IC TA75S01F(TE85R)	
IC504	8-759-443-08	IC TC7W241FU-TE12R		IC4100	8-759-060-94	IC MB3785APFV-G-BND-ER	
IC701	8-752-397-67	IC CXD3400N-T4		IC4200	8-759-339-61	IC LB1897D	
IC702	8-752-397-67	IC CXD3400N-T4		IC4202	8-759-338-95	IC NJM2903V(TE2)	
IC704	8-752-083-11	IC CXA2107R-T4		IC4300	8-759-327-61	IC LB8112V-TLM	
IC705	8-752-408-78	IC CXD2484AR-T4		IC4400	8-759-431-41	IC LB1991V-TLM	
IC706	8-759-598-08	IC AK5483-L		IC4500	8-759-431-30	IC CXA8062R-EB	
IC707	8-759-075-66	IC TA75S01F(TE85R)		IC4501	8-759-434-46	IC TA8486F(EL)	
IC771	8-752-397-00	IC CXD3116AR-T6		< JUMPER RESISTOR >			
IC801	8-759-445-94	IC BR9080RFV-E2		JR4501	1-216-864-11	METAL CHIP 0 5% 1/16W	
IC802	8-752-918-26	IC CXP972048-021R-T6		JR4503	1-216-864-11	METAL CHIP 0 5% 1/16W	
IC803	8-759-426-25	IC MB88346L PFV-G-BND-ER		JR4505	1-216-864-11	METAL CHIP 0 5% 1/16W	
IC903	8-759-653-60	IC MB87L1241PFV-G-BND-ER		< SHORT JUMPER >			
IC1001	8-759-689-59	IC LA74207FN-TBM		JS002	1-216-864-11	METAL CHIP 0 5% 1/16W	
IC1002	8-759-647-71	IC AK4550VT-E2		< COIL >			
IC1003	8-759-680-44	IC TLC2272CDR		L101	1-414-771-91	INDUCTOR CHIP 10uH	
IC1004	8-759-689-59	IC LA74207FN-TBM		L102	1-414-771-91	INDUCTOR CHIP 10uH	
IC1005	8-759-430-57	IC M62367GP-75ED		L103	1-414-771-91	INDUCTOR CHIP 10uH	
IC1006	8-759-633-55	IC M5222FP-E1		L140	1-414-754-11	INDUCTOR 10uH	
IC1007	8-759-633-55	IC M5222FP-E1		L141	1-414-754-11	INDUCTOR 10uH	
IC1008	8-759-111-56	IC uPC4572G2-E2		L142	1-414-754-11	INDUCTOR 10uH	
IC1085	8-759-238-55	IC TC74HC4052AF (EL)		L143	1-414-754-11	INDUCTOR 10uH	
IC1086	8-759-299-00	IC BA7785FS-E2		L303	1-412-936-11	INDUCTOR 0.56uH	
IC1101	8-759-580-27	IC S-81236SGUP-DQ7-T1		L304	1-414-246-11	INDUCTOR 1.8uH	
IC1102	8-759-424-79	IC S-8423YFS-T2		L305	1-414-754-11	INDUCTOR 10uH	
IC1103	8-759-642-45	IC TL1596CPWR		L306	1-414-771-91	INDUCTOR CHIP 10uH	
IC1104	8-752-919-79	IC CXP921064A-027R-T6		L307	1-414-771-91	INDUCTOR CHIP 10uH	
IC1105	8-759-566-20	IC AK6440BH-E2		L701	1-414-755-11	INDUCTOR 22uH	
IC1301	8-759-599-37	IC AN2225FHQ-EB		L702	1-414-754-11	INDUCTOR 10uH	
IC1401	8-759-692-19	IC HD6437044P15XSZ		L703	1-414-755-11	INDUCTOR 22uH	
IC1402	8-759-234-20	IC TC7S08F(TE85R)		L801	1-414-754-11	INDUCTOR 10uH	
IC1403	8-759-693-38	IC K4F151612C-TL60T		L802	1-412-951-11	INDUCTOR 10uH	
IC1404	8-759-495-15	IC uPD4721GS-GJG-E2		L901	1-414-771-91	INDUCTOR CHIP 10uH	
IC1405	8-759-327-60	IC TC7W125FU-TE12R		L902	1-414-771-91	INDUCTOR CHIP 10uH	
IC1406	8-759-566-20	IC AK6440BH-E2		L1001	1-414-754-11	INDUCTOR 10uH	
IC1407	8-752-395-94	IC CXD3133AR		L1002	1-469-058-11	INDUCTOR CHIP 22uH	
IC1409	8-759-547-24	IC RL5V834/E2H		L1003	1-414-754-11	INDUCTOR 10uH	
IC1410	8-759-584-32	IC MB86189PFV-G-BND-ER		L1004	1-414-754-11	INDUCTOR 10uH	
IC1411	8-759-058-60	IC TC7SU04FU(TE85R)		L1073	1-414-754-11	INDUCTOR 10uH	
IC1412	8-759-644-18	IC ML2201-100MBZ060		L1085	1-414-754-11	INDUCTOR 10uH	
IC1413	8-759-693-38	IC K4F151612C-TL60T		L1086	1-414-754-11	INDUCTOR 10uH	
IC1601	8-759-075-66	IC TA75S01F(TE85R)		L1301	1-469-058-11	INDUCTOR CHIP 22uH	
IC1602	8-759-075-66	IC TA75S01F(TE85R)		L1302	1-414-771-91	INDUCTOR CHIP 10uH	
IC1603	8-759-603-27	IC M5201FP-600D		L1303	1-412-937-11	INDUCTOR 0.68uH	
IC1604	8-759-603-27	IC M5201FP-600D		L1304	1-414-771-91	INDUCTOR CHIP 10uH	
IC1607	8-759-603-27	IC M5201FP-600D		L2200	1-414-754-11	INDUCTOR 10uH	
IC1608	8-759-603-27	IC M5201FP-600D		L2501	1-414-771-91	INDUCTOR CHIP 10uH	
IC1611	8-759-603-27	IC M5201FP-600D		L2770	1-412-951-11	INDUCTOR 10uH	
IC1612	8-759-603-27	IC M5201FP-600D		L2771	1-412-963-11	INDUCTOR 100uH	
IC2200	8-759-489-19	IC uPC6756GR-8JG-E2		L2773	1-414-771-91	INDUCTOR CHIP 10uH	
IC2501	8-759-564-49	IC TC7W53FU(TE12R)		L2774	1-414-754-11	INDUCTOR 10uH	
IC2502	8-759-564-49	IC TC7W53FU(TE12R)		L3302	1-416-669-11	INDUCTOR 22uH	
IC2770	8-759-359-49	IC NJM3414AV(TE2)		L3303	1-416-669-11	INDUCTOR 22uH	
IC2771	8-759-359-49	IC NJM3414AV(TE2)		L3304	1-416-669-11	INDUCTOR 22uH	
IC2772	8-759-823-51	IC LB1830M-TLM		L3305	1-416-669-11	INDUCTOR 22uH	
IC2773	8-759-444-87	IC NJM324V(TE2)					
IC2774	8-759-058-45	IC NJM3403AV(TE2)					
IC2775	8-759-478-92	IC TC7SET04FU(TE85R)					
IC2776	8-759-478-92	IC TC7SET04FU(TE85R)					

Ref. No.	Part No.	Description	Remarks
L3306	1-412-056-11	INDUCTOR 4.7uH	
L3307	1-414-770-91	INDUCTOR CHIP 4.7uH	
L3308	1-412-056-11	INDUCTOR 4.7uH	
L3309	1-414-400-11	INDUCTOR 22uH	
L3310	1-414-770-91	INDUCTOR CHIP 4.7uH	
L3311	1-414-771-91	INDUCTOR CHIP 10uH	
L3312	1-412-056-11	INDUCTOR 4.7uH	
L3313	1-414-770-91	INDUCTOR CHIP 4.7uH	
L3314	1-414-770-91	INDUCTOR CHIP 4.7uH	
L3315	1-414-394-11	INDUCTOR 2.2uH	
L3316	1-414-770-91	INDUCTOR CHIP 4.7uH	
L3318	1-469-058-11	INDUCTOR CHIP 22uH	
L3319	1-414-770-91	INDUCTOR CHIP 4.7uH	
L3451	1-414-770-91	INDUCTOR CHIP 4.7uH	
L4100	1-406-823-11	INDUCTOR 10uH	
L4101	1-406-823-11	INDUCTOR 10uH	
L4102	1-424-522-21	INDUCTOR 10uH	
L4103	1-406-823-11	INDUCTOR 10uH	
L4104	1-409-535-41	INDUCTOR 100uH	
L4105	1-409-535-41	INDUCTOR 100uH	
L4106	1-424-523-21	INDUCTOR 22uH	
L4107	1-406-825-11	INDUCTOR 33uH	
L4200	1-414-398-11	INDUCTOR 10uH	
L4400	1-414-754-11	INDUCTOR 10uH	
L4500	1-414-754-11	INDUCTOR 10uH	

< TRANSISTOR >

Q004	8-729-037-72	TRANSISTOR UN9211J-(K8).SO	
Q102	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q140	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q141	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q142	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q143	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q301	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q302	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q303	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q304	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q305	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q306	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q307	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q308	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q701	8-729-042-68	TRANSISTOR UN911FJ-(K8).SO	
Q702	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q801	8-729-037-72	TRANSISTOR UN9211J-(K8).SO	
Q902	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q903	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q904	8-729-049-91	TRANSISTOR 2SA2018H-T2L	
Q905	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q906	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q1001	8-729-037-71	TRANSISTOR UN9210J-(K8).SO	
Q1002	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q1003	8-729-037-71	TRANSISTOR UN9210J-(K8).SO	
Q1004	8-729-037-63	TRANSISTOR UN9115J-(K8).SO	
Q1005	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q1007	8-729-117-32	TRANSISTOR 2SC4177-T1L5L6	
Q1008	8-729-037-63	TRANSISTOR UN9115J-(K8).SO	
Q1010	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	

Ref. No.	Part No.	Description	Remarks
Q1011	8-729-024-39	TRANSISTOR 2SD1511-R/S(TX)	
Q1014	8-729-037-63	TRANSISTOR UN9115J-(K8).SO	
Q1015	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q1016	8-729-117-32	TRANSISTOR 2SC4177-T1L5L6	
Q1024	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q1025	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q1031	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q1032	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q1033	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q1034	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q1101	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q1103	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q1106	8-729-042-58	TRANSISTOR UN9111J-(K8).SO	
Q1107	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q1108	8-729-037-61	TRANSISTOR UN9113J-(K8).SO	
Q1109	8-729-049-91	TRANSISTOR 2SA2018H-T2L	
Q1112	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q1113	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q1301	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q1302	8-729-037-61	TRANSISTOR UN9113J-(K8).SO	
Q1303	8-729-049-25	TRANSISTOR 2SC5376F-B(TPL3)	
Q1304	8-729-049-25	TRANSISTOR 2SC5376F-B(TPL3)	
Q1305	8-729-049-25	TRANSISTOR 2SC5376F-B(TPL3)	
Q1306	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q1401	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q1402	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q1403	8-729-037-61	TRANSISTOR UN9113J-(K8).SO	
Q1404	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q1405	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q1601	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q1602	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q2200	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q2201	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q2501	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q2502	8-729-037-72	TRANSISTOR UN9211J-(K8).SO	
Q2770	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q2771	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q2772	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q2773	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q2774	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q2775	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q2776	8-729-013-31	TRANSISTOR 2SA1588-OY-TE85L	
Q2777	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q2778	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q3305	8-729-050-24	TRANSISTOR MCH6202-TL	
Q3306	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q3307	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q3308	8-729-043-60	TRANSISTOR CPH6102-TL	
Q3309	8-729-046-98	TRANSISTOR CPH6702-TL	
Q3312	8-729-046-98	TRANSISTOR CPH6702-TL	
Q3313	8-729-046-98	TRANSISTOR CPH6702-TL	
Q3314	8-729-046-98	TRANSISTOR CPH6702-TL	
Q3315	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q3316	8-729-017-61	TRANSISTOR 2SB1581-T1	
Q3317	8-729-042-26	TRANSISTOR 2SB1462J-QR(K8).SO	
Q3318	8-729-044-58	TRANSISTOR SI2304DS-T1	
Q3321	8-729-044-58	TRANSISTOR SI2304DS-T1	
Q3322	8-729-044-58	TRANSISTOR SI2304DS-T1	
Q3323	8-729-044-58	TRANSISTOR SI2304DS-T1	
Q3324	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
Q3325	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO	R103	1-218-965-11	RES-CHIP	10K 5% 1/16W
Q3326	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	R104	1-218-963-11	RES-CHIP	6.8K 5% 1/16W
Q3327	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	R105	1-218-990-11	SHORT	0
Q3328	8-729-042-26	TRANSISTOR	2SB1462J-QR(K8).SO	R106	1-218-989-11	RES-CHIP	1M 5% 1/16W
Q3331	8-729-042-26	TRANSISTOR	2SB1462J-QR(K8).SO	R107	1-218-979-11	RES-CHIP	150K 5% 1/16W
Q3332	8-729-042-26	TRANSISTOR	2SB1462J-QR(K8).SO	R108	1-218-966-11	RES-CHIP	12K 5% 1/16W
Q3333	8-729-042-26	TRANSISTOR	2SB1462J-QR(K8).SO	R109	1-218-965-11	RES-CHIP	10K 5% 1/16W
Q3334	8-729-049-25	TRANSISTOR	2SC5376F-B(TPL3)	R110	1-218-949-11	RES-CHIP	470 5% 1/16W
Q3335	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	R112	1-218-966-11	RES-CHIP	12K 5% 1/16W
Q3336	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	R113	1-218-961-11	RES-CHIP	4.7K 5% 1/16W
Q3337	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	R114	1-218-965-11	RES-CHIP	10K 5% 1/16W
Q3338	8-729-042-26	TRANSISTOR	2SB1462J-QR(K8).SO	R115	1-218-969-11	RES-CHIP	22K 5% 1/16W
Q3340	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	R116	1-208-910-11	METAL CHIP	9.1K 0.5% 1/16W
Q3341	8-729-049-91	TRANSISTOR	2SA2018H-T2L	R117	1-208-909-11	METAL CHIP	8.2K 0.5% 1/16W
Q3344	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	R118	1-218-969-11	RES-CHIP	22K 5% 1/16W
Q3345	8-729-034-59	TRANSISTOR	2SA1745-6.7-TL	R120	1-218-945-11	METAL CHIP	220 0.5% 1/16W
Q3348	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	R122	1-218-945-11	METAL CHIP	220 0.5% 1/16W
Q3349	8-729-042-26	TRANSISTOR	2SB1462J-QR(K8).SO	R123	1-218-945-11	METAL CHIP	220 0.5% 1/16W
Q3351	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	R124	1-218-945-11	METAL CHIP	220 0.5% 1/16W
Q3352	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO	R125	1-216-864-11	METAL CHIP	0 5% 1/16W
Q3353	8-729-024-39	TRANSISTOR	2SD1511-R/S(TX)	R126	1-216-864-11	METAL CHIP	0 5% 1/16W
Q4100	8-729-048-75	TRANSISTOR	CPH3109-TL	R127	1-218-939-11	RES-CHIP	68 5% 1/16W
Q4101	8-729-048-75	TRANSISTOR	CPH3109-TL	R128	1-218-990-11	SHORT	0
Q4102	8-729-048-75	TRANSISTOR	CPH3109-TL	R129	1-218-990-11	SHORT	0
Q4103	8-729-048-75	TRANSISTOR	CPH3109-TL	R140	1-218-953-11	RES-CHIP	1K 5% 1/16W
Q4104	8-729-216-22	TRANSISTOR	2SB709A-QRS-TX	R141	1-218-973-11	RES-CHIP	47K 5% 1/16W
Q4105	8-729-037-72	TRANSISTOR	UN9211J-(TX).SO	R142	1-218-975-11	RES-CHIP	68K 5% 1/16W
Q4200	8-729-216-22	TRANSISTOR	2SB709A-QRS-TX	R143	1-218-975-11	RES-CHIP	68K 5% 1/16W
Q4201	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	R144	1-218-975-11	RES-CHIP	68K 5% 1/16W
Q4301	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	R145	1-218-975-11	RES-CHIP	68K 5% 1/16W
Q4302	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	R146	1-218-975-11	RES-CHIP	68K 5% 1/16W
Q4501	8-729-216-22	TRANSISTOR	2SB709A-QRS-TX	R147	1-216-295-11	SHORT	0
< RESISTOR >				R148	1-218-973-11	RES-CHIP	47K 5% 1/16W
R001	1-218-954-11	RES-CHIP	1.2K 5% 1/16W	R150	1-218-953-11	RES-CHIP	1K 5% 1/16W
R002	1-218-955-11	RES-CHIP	1.5K 5% 1/16W	R151	1-218-989-11	RES-CHIP	1M 5% 1/16W
R003	1-218-959-11	RES-CHIP	3.3K 5% 1/16W	R152	1-218-957-11	RES-CHIP	2.2K 5% 1/16W
R004	1-218-963-11	RES-CHIP	6.8K 5% 1/16W	R153	1-218-965-11	RES-CHIP	10K 5% 1/16W
R007	1-218-961-11	RES-CHIP	4.7K 5% 1/16W	R154	1-218-981-11	RES-CHIP	220K 5% 1/16W
R008	1-218-990-11	SHORT	0	R155	1-218-985-11	RES-CHIP	470K 5% 1/16W
R010	1-218-990-11	SHORT	0	R156	1-218-985-11	RES-CHIP	470K 5% 1/16W
R051	1-216-845-11	METAL CHIP	100K 5% 1/16W	R157	1-218-957-11	RES-CHIP	2.2K 5% 1/16W
R052	1-216-845-11	METAL CHIP	100K 5% 1/16W	R158	1-218-967-11	RES-CHIP	15K 5% 1/16W
R053	1-216-845-11	METAL CHIP	100K 5% 1/16W	R159	1-218-969-11	RES-CHIP	22K 5% 1/16W
R054	1-216-845-11	METAL CHIP	100K 5% 1/16W	R160	1-218-985-11	RES-CHIP	470K 5% 1/16W
R055	1-216-845-11	METAL CHIP	100K 5% 1/16W	R161	1-218-953-11	RES-CHIP	1K 5% 1/16W
R056	1-216-845-11	METAL CHIP	100K 5% 1/16W	R162	1-218-953-11	RES-CHIP	1K 5% 1/16W
R057	1-216-845-11	METAL CHIP	100K 5% 1/16W	R163	1-218-947-11	RES-CHIP	330 5% 1/16W
R058	1-216-845-11	METAL CHIP	100K 5% 1/16W	R164	1-218-969-11	RES-CHIP	22K 5% 1/16W
R059	1-216-845-11	METAL CHIP	100K 5% 1/16W	R165	1-218-953-11	RES-CHIP	1K 5% 1/16W
R060	1-216-845-11	METAL CHIP	100K 5% 1/16W	R166	1-218-965-11	RES-CHIP	10K 5% 1/16W
R061	1-216-845-11	METAL CHIP	100K 5% 1/16W	R167	1-218-973-11	RES-CHIP	47K 5% 1/16W
R062	1-216-845-11	METAL CHIP	100K 5% 1/16W	R168	1-208-927-11	METAL CHIP	47K 0.5% 1/16W
R063	1-216-845-11	METAL CHIP	100K 5% 1/16W	R169	1-208-713-11	METAL CHIP	18K 0.5% 1/16W
R064	1-216-845-11	METAL CHIP	100K 5% 1/16W	R170	1-208-675-11	METAL CHIP	470 0.5% 1/16W
R065	1-216-845-11	METAL CHIP	100K 5% 1/16W	R171	1-218-973-11	RES-CHIP	47K 5% 1/16W
R066	1-216-809-11	METAL CHIP	100 5% 1/16W	R172	1-218-973-11	RES-CHIP	47K 5% 1/16W
R067	1-216-845-11	METAL CHIP	100K 5% 1/16W	R173	1-218-953-11	RES-CHIP	1K 5% 1/16W
R068	1-216-845-11	METAL CHIP	100K 5% 1/16W	R174	1-218-953-11	RES-CHIP	1K 5% 1/16W
				R177	1-218-974-11	RES-CHIP	56K 5% 1/16W
				R178	1-218-950-11	RES-CHIP	560 5% 1/16W

Ref. No.	Part No.	Description	Remarks			Ref. No.	Part No.	Description	Remarks		
R179	1-218-973-11	RES-CHIP	47K	5%	1/16W	R503	1-218-977-11	RES-CHIP	100K	5%	1/16W
R180	1-218-973-11	RES-CHIP	47K	5%	1/16W	R504	1-218-977-11	RES-CHIP	100K	5%	1/16W
R181	1-218-953-11	RES-CHIP	1K	5%	1/16W	R505	1-218-985-11	RES-CHIP	470K	5%	1/16W
R182	1-218-953-11	RES-CHIP	1K	5%	1/16W	R507	1-218-953-11	RES-CHIP	1K	5%	1/16W
R185	1-218-974-11	RES-CHIP	56K	5%	1/16W	R508	1-218-985-11	RES-CHIP	470K	5%	1/16W
R186	1-218-950-11	RES-CHIP	560	5%	1/16W	R509	1-218-985-11	RES-CHIP	470K	5%	1/16W
R187	1-216-295-11	SHORT	0			R510	1-218-985-11	RES-CHIP	470K	5%	1/16W
R224	1-216-841-11	METAL CHIP	47K	5%	1/16W	R511	1-218-985-11	RES-CHIP	470K	5%	1/16W
R305	1-218-990-11	SHORT	0			R512	1-218-985-11	RES-CHIP	470K	5%	1/16W
R306	1-218-990-11	SHORT	0			R513	1-218-953-11	RES-CHIP	1K	5%	1/16W
R310	1-218-965-11	RES-CHIP	10K	5%	1/16W	R514	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R311	1-218-965-11	RES-CHIP	10K	5%	1/16W	R515	1-218-990-11	SHORT	0		
R312	1-218-946-11	RES-CHIP	270	5%	1/16W	R516	1-218-977-11	RES-CHIP	100K	5%	1/16W
R313	1-218-990-11	SHORT	0			R517	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R314	1-218-990-11	SHORT	0			R518	1-208-943-11	METAL CHIP	220K	0.5%	1/16W
R315	1-218-959-11	RES-CHIP	3.3K	5%	1/16W	R520	1-218-943-11	RES-CHIP	150	5%	1/16W
R316	1-218-959-11	RES-CHIP	3.3K	5%	1/16W	R521	1-218-945-11	RES-CHIP	220	5%	1/16W
R317	1-218-959-11	RES-CHIP	3.3K	5%	1/16W	R522	1-218-943-11	RES-CHIP	150	5%	1/16W
R318	1-218-965-11	RES-CHIP	10K	5%	1/16W	R523	1-218-945-11	RES-CHIP	220	5%	1/16W
R319	1-218-965-11	RES-CHIP	10K	5%	1/16W	R524	1-218-990-11	SHORT	0		
R320	1-218-957-11	RES-CHIP	2.2K	5%	1/16W	R525	1-218-990-11	SHORT	0		
R321	1-218-965-11	RES-CHIP	10K	5%	1/16W	R527	1-218-977-11	RES-CHIP	100K	5%	1/16W
R322	1-218-941-11	RES-CHIP	100	5%	1/16W	R528	1-218-977-11	RES-CHIP	100K	5%	1/16W
R323	1-218-947-11	RES-CHIP	330	5%	1/16W	R531	1-218-965-11	RES-CHIP	10K	5%	1/16W
R324	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R532	1-218-977-11	RES-CHIP	100K	5%	1/16W
R325	1-218-937-11	RES-CHIP	47	5%	1/16W	R533	1-218-985-11	RES-CHIP	470K	5%	1/16W
R326	1-218-990-11	SHORT	0			R534	1-218-985-11	RES-CHIP	470K	5%	1/16W
R327	1-218-953-11	RES-CHIP	1K	5%	1/16W	R535	1-216-821-11	METAL CHIP	1K	5%	1/16W
R328	1-218-953-11	RES-CHIP	1K	5%	1/16W	R536	1-216-821-11	METAL CHIP	1K	5%	1/16W
R329	1-218-945-11	RES-CHIP	220	5%	1/16W	R537	1-218-953-11	RES-CHIP	1K	5%	1/16W
R331	1-218-952-11	RES-CHIP	820	5%	1/16W	R538	1-218-953-11	RES-CHIP	1K	5%	1/16W
R332	1-218-953-11	RES-CHIP	1K	5%	1/16W	R539	1-218-953-11	RES-CHIP	1K	5%	1/16W
R334	1-218-953-11	RES-CHIP	1K	5%	1/16W	R540	1-218-953-11	RES-CHIP	1K	5%	1/16W
R335	1-218-945-11	RES-CHIP	220	5%	1/16W	R542	1-218-953-11	RES-CHIP	1K	5%	1/16W
R336	1-218-952-11	RES-CHIP	820	5%	1/16W	R701	1-218-977-11	RES-CHIP	100K	5%	1/16W
R338	1-218-957-11	RES-CHIP	2.2K	5%	1/16W	R703	1-220-193-81	RES-CHIP	7.5K	5%	1/16W
R340	1-218-953-11	RES-CHIP	1K	5%	1/16W	R708	1-218-990-11	SHORT	0		
R341	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R710	1-218-990-11	SHORT	0		
R343	1-218-952-11	RES-CHIP	820	5%	1/16W	R711	1-208-683-11	METAL CHIP	1K	0.5%	1/16W
R351	1-218-954-11	RES-CHIP	1.2K	5%	1/16W	R712	1-208-712-11	METAL CHIP	16K	0.5%	1/16W
R356	1-218-957-11	RES-CHIP	2.2K	5%	1/16W	R713	1-208-713-11	METAL CHIP	18K	0.5%	1/16W
R358	1-218-943-11	RES-CHIP	150	5%	1/16W	R714	1-218-934-11	RES-CHIP	27	5%	1/16W
R360	1-218-957-11	RES-CHIP	2.2K	5%	1/16W	R715	1-218-934-11	RES-CHIP	27	5%	1/16W
R361	1-208-709-11	METAL CHIP	12K	0.5%	1/16W	R716	1-208-713-11	METAL CHIP	18K	0.5%	1/16W
R364	1-208-709-11	METAL CHIP	12K	0.5%	1/16W	R717	1-208-713-11	METAL CHIP	18K	0.5%	1/16W
R367	1-218-938-11	METAL CHIP	56	0.5%	1/16W	R718	1-208-713-11	METAL CHIP	18K	0.5%	1/16W
R368	1-218-938-11	METAL CHIP	56	0.5%	1/16W	R719	1-208-713-11	METAL CHIP	18K	0.5%	1/16W
R369	1-208-707-11	METAL CHIP	10K	0.5%	1/16W	R720	1-208-713-11	METAL CHIP	18K	0.5%	1/16W
R370	1-218-938-11	METAL CHIP	56	0.5%	1/16W	R721	1-218-934-11	RES-CHIP	27	5%	1/16W
R371	1-208-707-11	METAL CHIP	10K	0.5%	1/16W	R722	1-218-934-11	RES-CHIP	27	5%	1/16W
R372	1-218-938-11	METAL CHIP	56	0.5%	1/16W	R723	1-218-934-11	RES-CHIP	27	5%	1/16W
R377	1-218-941-11	RES-CHIP	100	5%	1/16W	R724	1-218-934-11	RES-CHIP	27	5%	1/16W
R378	1-218-941-11	RES-CHIP	100	5%	1/16W	R725	1-218-935-11	RES-CHIP	33	5%	1/16W
R379	1-218-941-11	RES-CHIP	100	5%	1/16W	R726	1-218-935-11	RES-CHIP	33	5%	1/16W
R380	1-218-941-11	RES-CHIP	100	5%	1/16W	R727	1-218-935-11	RES-CHIP	33	5%	1/16W
R381	1-218-941-11	RES-CHIP	100	5%	1/16W	R730	1-218-990-11	SHORT	0		
R382	1-218-990-11	SHORT	0			R732	1-218-985-11	RES-CHIP	470K	5%	1/16W
R383	1-218-990-11	SHORT	0			R733	1-218-937-11	RES-CHIP	47	5%	1/16W
R501	1-218-977-11	RES-CHIP	100K	5%	1/16W	R735	1-218-962-11	RES-CHIP	5.6K	5%	1/16W
R502	1-218-977-11	RES-CHIP	100K	5%	1/16W	R736	1-218-965-11	RES-CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks
R751	1-218-959-11	RES-CHIP	3.3K	5%	1/16W	R1020	1-218-971-11	RES-CHIP	33K	5%	1/16W
R773	1-218-990-11	SHORT	0			R1021	1-218-971-11	RES-CHIP	33K	5%	1/16W
R801	1-218-977-11	RES-CHIP	100K	5%	1/16W	R1022	1-218-965-11	RES-CHIP	10K	5%	1/16W
R802	1-218-977-11	RES-CHIP	100K	5%	1/16W	R1023	1-218-965-11	RES-CHIP	10K	5%	1/16W
R803	1-218-977-11	RES-CHIP	100K	5%	1/16W	R1024	1-218-977-11	RES-CHIP	100K	5%	1/16W
R812	1-218-977-11	RES-CHIP	100K	5%	1/16W	R1025	1-218-953-11	RES-CHIP	1K	5%	1/16W
R813	1-218-977-11	RES-CHIP	100K	5%	1/16W	R1026	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R814	1-218-977-11	RES-CHIP	100K	5%	1/16W	R1027	1-218-966-11	RES-CHIP	12K	5%	1/16W
R815	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1028	1-218-945-11	METAL CHIP	220	0.5%	1/16W
R818	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1031	1-218-949-11	RES-CHIP	470	5%	1/16W
R819	1-218-989-11	RES-CHIP	1M	5%	1/16W	R1032	1-218-953-11	RES-CHIP	1K	5%	1/16W
R820	1-218-973-11	RES-CHIP	47K	5%	1/16W	R1033	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R826	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1034	1-208-928-11	METAL CHIP	51K	0.5%	1/16W
R827	1-218-977-11	RES-CHIP	100K	5%	1/16W	R1035	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R828	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1036	1-218-864-11	METAL CHIP	5.1K	0.5%	1/16W
R829	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1037	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R830	1-218-989-11	RES-CHIP	1M	5%	1/16W	R1041	1-218-953-11	RES-CHIP	1K	5%	1/16W
R831	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1049	1-218-973-11	RES-CHIP	47K	5%	1/16W
R833	1-218-977-11	RES-CHIP	100K	5%	1/16W	R1050	1-218-971-11	RES-CHIP	33K	5%	1/16W
R835	1-218-989-11	RES-CHIP	1M	5%	1/16W	R1051	1-218-977-11	RES-CHIP	100K	5%	1/16W
R836	1-218-985-11	RES-CHIP	470K	5%	1/16W	R1053	1-218-949-11	RES-CHIP	470	5%	1/16W
R837	1-218-985-11	RES-CHIP	470K	5%	1/16W	R1054	1-216-864-11	METAL CHIP	0	5%	1/16W
R839	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R1056	1-216-814-11	METAL CHIP	270	5%	1/16W
R840	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R1057	1-216-864-11	METAL CHIP	0	5%	1/16W
R841	1-218-985-11	RES-CHIP	470K	5%	1/16W	R1059	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R842	1-218-985-11	RES-CHIP	470K	5%	1/16W	R1060	1-218-980-11	RES-CHIP	180K	5%	1/16W
R850	1-218-977-11	RES-CHIP	100K	5%	1/16W	R1061	1-218-981-11	RES-CHIP	220K	5%	1/16W
R851	1-218-977-11	RES-CHIP	100K	5%	1/16W	R1062	1-218-969-11	RES-CHIP	22K	5%	1/16W
R852	1-218-977-11	RES-CHIP	100K	5%	1/16W	R1063	1-218-969-11	RES-CHIP	22K	5%	1/16W
R853	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1064	1-218-981-11	RES-CHIP	220K	5%	1/16W
R907	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1066	1-218-962-11	RES-CHIP	5.6K	5%	1/16W
R908	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1067	1-218-962-11	RES-CHIP	5.6K	5%	1/16W
R909	1-218-973-11	RES-CHIP	47K	5%	1/16W	R1068	1-218-980-11	RES-CHIP	180K	5%	1/16W
R911	1-218-951-11	RES-CHIP	680	5%	1/16W	R1069	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R912	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1070	1-218-966-11	RES-CHIP	12K	5%	1/16W
R916	1-218-949-11	RES-CHIP	470	5%	1/16W	R1071	1-218-966-11	RES-CHIP	12K	5%	1/16W
R924	1-218-990-11	SHORT	0			R1072	1-218-953-11	RES-CHIP	1K	5%	1/16W
R930	1-218-990-11	SHORT	0			R1073	1-218-953-11	RES-CHIP	1K	5%	1/16W
R936	1-218-990-11	SHORT	0			R1074	1-218-960-11	RES-CHIP	3.9K	5%	1/16W
R949	1-218-990-11	SHORT	0			R1075	1-218-960-11	RES-CHIP	3.9K	5%	1/16W
R953	1-218-990-11	SHORT	0			R1079	1-218-969-11	RES-CHIP	22K	5%	1/16W
R954	1-218-941-11	RES-CHIP	100	5%	1/16W	R1084	1-216-845-11	METAL CHIP	100K	5%	1/16W
R955	1-218-977-11	RES-CHIP	100K	5%	1/16W	R1085	1-216-821-11	METAL CHIP	1K	5%	1/16W
R956	1-218-960-11	RES-CHIP	3.9K	5%	1/16W	R1086	1-216-821-11	METAL CHIP	1K	5%	1/16W
R957	1-218-957-11	RES-CHIP	2.2K	5%	1/16W	R1087	1-216-845-11	METAL CHIP	100K	5%	1/16W
R958	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1088	1-216-800-11	RES-CHIP	18	5%	1/16W
R1001	1-218-957-11	RES-CHIP	2.2K	5%	1/16W	R1089	1-216-800-11	RES-CHIP	18	5%	1/16W
R1002	1-218-945-11	METAL CHIP	220	0.5%	1/16W	R1090	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1003	1-218-990-11	SHORT	0			R1091	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1004	1-218-990-11	SHORT	0			R1092	1-216-807-11	METAL CHIP	68	5%	1/16W
R1005	1-218-957-11	RES-CHIP	2.2K	5%	1/16W	R1093	1-218-985-11	RES-CHIP	470K	5%	1/16W
R1006	1-208-927-11	METAL CHIP	47K	0.5%	1/16W	R1094	1-218-985-11	RES-CHIP	470K	5%	1/16W
R1007	1-218-941-11	RES-CHIP	100	5%	1/16W	R1095	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1008	1-218-941-11	RES-CHIP	100	5%	1/16W	R1096	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1009	1-216-295-11	SHORT	0			R1097	1-218-952-11	RES-CHIP	820	5%	1/16W
R1010	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1098	1-218-952-11	RES-CHIP	820	5%	1/16W
R1011	1-208-928-11	METAL CHIP	51K	0.5%	1/16W	R1099	1-216-864-11	METAL CHIP	0	5%	1/16W
R1015	1-218-960-11	RES-CHIP	3.9K	5%	1/16W	R1100	1-216-864-11	METAL CHIP	0	5%	1/16W
R1016	1-218-973-11	RES-CHIP	47K	5%	1/16W	R1101	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1018	1-218-864-11	METAL CHIP	5.1K	0.5%	1/16W	R1102	1-216-845-11	METAL CHIP	100K	5%	1/16W

Ref. No.	Part No.	Description	Remarks			Ref. No.	Part No.	Description	Remarks		
R1103	1-218-973-11	RES-CHIP	47K	5%	1/16W	R1189	1-218-985-11	RES-CHIP	470K	5%	1/16W
R1104	1-216-845-11	METAL CHIP	100K	5%	1/16W	R1191	1-218-977-11	RES-CHIP	100K	5%	1/16W
R1105	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1193	1-218-977-11	RES-CHIP	100K	5%	1/16W
R1108	1-218-985-11	RES-CHIP	470K	5%	1/16W	R1194	1-218-977-11	RES-CHIP	100K	5%	1/16W
R1109	1-218-936-11	RES-CHIP	39	5%	1/16W	R1195	1-218-977-11	RES-CHIP	100K	5%	1/16W
R1110	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1196	1-218-962-11	RES-CHIP	5.6K	5%	1/16W
R1112	1-218-985-11	RES-CHIP	470K	5%	1/16W	R1197	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R1113	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1198	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1116	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1199	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1117	1-218-985-11	RES-CHIP	470K	5%	1/16W	R1200	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1118	1-218-985-11	RES-CHIP	470K	5%	1/16W	R1201	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1119	1-218-985-11	RES-CHIP	470K	5%	1/16W	R1202	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1120	1-218-985-11	RES-CHIP	470K	5%	1/16W	R1203	1-219-570-11	RES-CHIP	10M	5%	1/16W
R1121	1-218-985-11	RES-CHIP	470K	5%	1/16W	R1206	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R1122	1-218-985-11	RES-CHIP	470K	5%	1/16W	R1207	1-218-977-11	RES-CHIP	100K	5%	1/16W
R1123	1-218-985-11	RES-CHIP	470K	5%	1/16W	R1208	1-218-985-11	RES-CHIP	470K	5%	1/16W
R1124	1-218-977-11	RES-CHIP	100K	5%	1/16W	R1209	1-218-985-11	RES-CHIP	470K	5%	1/16W
R1126	1-218-985-11	RES-CHIP	470K	5%	1/16W	R1210	1-218-985-11	RES-CHIP	470K	5%	1/16W
R1128	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R1211	1-218-949-11	RES-CHIP	470	5%	1/16W
R1129	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1212	1-216-791-11	METAL CHIP	3.3	5%	1/16W
R1130	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1213	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1131	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1214	1-218-985-11	RES-CHIP	470K	5%	1/16W
R1132	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1215	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R1133	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1216	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R1134	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1217	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R1137	1-218-958-11	RES-CHIP	2.7K	5%	1/16W	R1218	1-218-990-11	SHORT	0		
R1138	1-218-977-11	RES-CHIP	100K	5%	1/16W	R1220	1-218-985-11	RES-CHIP	470K	5%	1/16W
R1139	1-218-989-11	RES-CHIP	1M	5%	1/16W	R1222	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1140	1-208-943-11	METAL CHIP	220K	0.5%	1/16W	R1223	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1142	1-218-989-11	METAL CHIP	1M	0.5%	1/16W	R1224	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1144	1-218-977-11	RES-CHIP	100K	5%	1/16W	R1229	1-218-989-11	RES-CHIP	1M	5%	1/16W
R1145	1-218-977-11	RES-CHIP	100K	5%	1/16W	R1231	1-218-977-11	RES-CHIP	100K	5%	1/16W
R1146	1-218-977-11	RES-CHIP	100K	5%	1/16W	R1232	1-218-949-11	RES-CHIP	470	5%	1/16W
R1147	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1233	1-218-985-11	RES-CHIP	470K	5%	1/16W
R1148	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1234	1-218-985-11	RES-CHIP	470K	5%	1/16W
R1149	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1237	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1150	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1238	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1151	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1301	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1152	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1302	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1153	1-218-977-11	RES-CHIP	100K	5%	1/16W	R1304	1-218-941-11	RES-CHIP	100	5%	1/16W
R1154	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1305	1-218-981-11	RES-CHIP	220K	5%	1/16W
R1155	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1306	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1156	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1307	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1157	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1308	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1158	1-218-985-11	RES-CHIP	470K	5%	1/16W	R1312	1-218-935-11	RES-CHIP	33	5%	1/16W
R1159	1-218-985-11	RES-CHIP	470K	5%	1/16W	R1313	1-218-935-11	RES-CHIP	33	5%	1/16W
R1160	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1314	1-218-935-11	RES-CHIP	33	5%	1/16W
R1161	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1315	1-218-935-11	RES-CHIP	33	5%	1/16W
R1162	1-218-972-11	RES-CHIP	39K	5%	1/16W	R1316	1-218-935-11	RES-CHIP	33	5%	1/16W
R1163	1-218-964-11	RES-CHIP	9.1K	5%	1/16W	R1317	1-218-935-11	RES-CHIP	33	5%	1/16W
R1164	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1318	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R1165	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1319	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1166	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1320	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1167	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1321	1-218-971-11	RES-CHIP	33K	5%	1/16W
R1176	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1322	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1177	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1323	1-218-972-11	RES-CHIP	39K	5%	1/16W
R1178	1-218-953-11	RES-CHIP	1K	5%	1/16W	R1324	1-218-945-11	RES-CHIP	220	5%	1/16W
R1179	1-218-973-11	RES-CHIP	47K	5%	1/16W	R1325	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1180	1-218-989-11	RES-CHIP	1M	5%	1/16W	R1326	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1188	1-218-985-11	RES-CHIP	470K	5%	1/16W	R1327	1-218-953-11	RES-CHIP	1K	5%	1/16W

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R1328	1-218-953-11	RES-CHIP	1K 5% 1/16W	R1456	1-218-990-11	SHORT	0
R1329	1-218-953-11	RES-CHIP	1K 5% 1/16W	R1457	1-218-943-11	RES-CHIP	150 5% 1/16W
R1330	1-218-957-11	RES-CHIP	2.2K 5% 1/16W	R1601	1-218-973-11	RES-CHIP	47K 5% 1/16W
R1335	1-218-974-11	METAL CHIP	56K 0.5% 1/16W	R1602	1-218-973-11	RES-CHIP	47K 5% 1/16W
R1336	1-208-935-11	METAL CHIP	100K 0.5% 1/16W	R1603	1-208-915-11	RES-CHIP	15K 0.5% 1/16W
R1401	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1604	1-208-915-11	RES-CHIP	15K 0.5% 1/16W
R1402	1-218-985-11	RES-CHIP	470K 5% 1/16W	R1605	1-218-973-11	RES-CHIP	47K 5% 1/16W
R1403	1-218-985-11	RES-CHIP	470K 5% 1/16W	R1606	1-218-975-11	RES-CHIP	68K 5% 1/16W
R1404	1-218-973-11	RES-CHIP	47K 5% 1/16W	R1607	1-218-973-11	RES-CHIP	47K 5% 1/16W
R1405	1-218-958-11	RES-CHIP	2.7K 5% 1/16W	R1608	1-218-975-11	RES-CHIP	68K 5% 1/16W
R1406	1-218-946-11	RES-CHIP	270 5% 1/16W	R1609	1-218-965-11	RES-CHIP	10K 5% 1/16W
R1407	1-218-949-11	RES-CHIP	470 5% 1/16W	R1610	1-218-965-11	RES-CHIP	10K 5% 1/16W
R1408	1-218-985-11	RES-CHIP	470K 5% 1/16W	R1611	1-218-973-11	RES-CHIP	47K 5% 1/16W
R1409	1-218-944-11	RES-CHIP	180 5% 1/16W	R1612	1-218-973-11	RES-CHIP	47K 5% 1/16W
R1410	1-218-932-11	RES-CHIP	18 5% 1/16W	R1613	1-208-721-11	METAL CHIP	39K 0.5% 1/16W
R1411	1-218-973-11	RES-CHIP	47K 5% 1/16W	R1614	1-208-721-11	METAL CHIP	39K 0.5% 1/16W
R1412	1-218-973-11	RES-CHIP	47K 5% 1/16W	R1615	1-208-719-11	METAL CHIP	33K 0.5% 1/16W
R1413	1-218-990-11	SHORT	0	R1616	1-208-719-11	METAL CHIP	33K 0.5% 1/16W
R1414	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1617	1-218-973-11	RES-CHIP	47K 5% 1/16W
R1415	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1618	1-218-973-11	RES-CHIP	47K 5% 1/16W
R1416	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1619	1-218-965-11	RES-CHIP	10K 5% 1/16W
R1417	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1620	1-218-965-11	RES-CHIP	10K 5% 1/16W
R1418	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1621	1-218-973-11	RES-CHIP	47K 5% 1/16W
R1419	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1622	1-218-973-11	RES-CHIP	47K 5% 1/16W
R1420	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1623	1-216-800-11	RES-CHIP	18 5% 1/16W
R1421	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1624	1-216-800-11	RES-CHIP	18 5% 1/16W
R1422	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1625	1-218-952-11	RES-CHIP	820 5% 1/16W
R1423	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1626	1-218-952-11	RES-CHIP	820 5% 1/16W
R1424	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1629	1-218-973-11	RES-CHIP	47K 5% 1/16W
R1425	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1630	1-218-973-11	RES-CHIP	47K 5% 1/16W
R1426	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1631	1-208-721-11	METAL CHIP	39K 0.5% 1/16W
R1427	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1632	1-208-721-11	METAL CHIP	39K 0.5% 1/16W
R1428	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1633	1-208-719-11	METAL CHIP	33K 0.5% 1/16W
R1429	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1634	1-208-719-11	METAL CHIP	33K 0.5% 1/16W
R1430	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1635	1-218-973-11	RES-CHIP	47K 5% 1/16W
R1431	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1636	1-218-973-11	RES-CHIP	47K 5% 1/16W
R1432	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1639	1-218-973-11	RES-CHIP	47K 5% 1/16W
R1433	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1640	1-218-973-11	RES-CHIP	47K 5% 1/16W
R1434	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1642	1-216-821-11	METAL CHIP	1K 5% 1/16W
R1435	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1647	1-218-973-11	RES-CHIP	47K 5% 1/16W
R1436	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1648	1-218-973-11	RES-CHIP	47K 5% 1/16W
R1437	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1649	1-208-721-11	METAL CHIP	39K 0.5% 1/16W
R1438	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1650	1-208-721-11	METAL CHIP	39K 0.5% 1/16W
R1439	1-218-965-11	RES-CHIP	10K 5% 1/16W	R1651	1-208-719-11	METAL CHIP	33K 0.5% 1/16W
R1440	1-218-965-11	RES-CHIP	10K 5% 1/16W	R1652	1-208-719-11	METAL CHIP	33K 0.5% 1/16W
R1441	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1653	1-218-973-11	RES-CHIP	47K 5% 1/16W
R1442	1-218-965-11	RES-CHIP	10K 5% 1/16W	R1654	1-218-973-11	RES-CHIP	47K 5% 1/16W
R1443	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1657	1-218-973-11	RES-CHIP	47K 5% 1/16W
R1444	1-218-973-11	RES-CHIP	47K 5% 1/16W	R1658	1-218-973-11	RES-CHIP	47K 5% 1/16W
R1445	1-218-989-11	METAL CHIP	1M 0.5% 1/16W	R1660	1-208-925-11	RES-CHIP	39K 0.5% 1/16W
R1446	1-218-973-11	RES-CHIP	47K 5% 1/16W	R1661	1-208-910-11	RES-CHIP	9.1K 0.5% 1/16W
R1447	1-218-953-11	RES-CHIP	1K 5% 1/16W	R1662	1-208-925-11	RES-CHIP	39K 0.5% 1/16W
R1448	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1663	1-208-910-11	RES-CHIP	9.1K 0.5% 1/16W
R1449	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1664	1-208-689-11	METAL CHIP	1.8K 0.5% 1/16W
R1450	1-218-977-11	RES-CHIP	100K 5% 1/16W	R1665	1-208-689-11	METAL CHIP	1.8K 0.5% 1/16W
R1451	1-218-953-11	RES-CHIP	1K 5% 1/16W	R1666	1-208-689-11	METAL CHIP	1.8K 0.5% 1/16W
R1452	1-218-943-11	RES-CHIP	150 5% 1/16W	R1667	1-208-689-11	METAL CHIP	1.8K 0.5% 1/16W
R1453	1-218-961-11	RES-CHIP	4.7K 5% 1/16W	R1668	1-208-689-11	METAL CHIP	1.8K 0.5% 1/16W
R1454	1-218-953-11	RES-CHIP	1K 5% 1/16W	R1669	1-208-689-11	METAL CHIP	1.8K 0.5% 1/16W
R1455	1-218-938-11	RES-CHIP	56 5% 1/16W	R2200	1-218-969-11	RES-CHIP	22K 5% 1/16W

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remarks</u>			<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remarks</u>		
R2201	1-218-969-11	RES-CHIP	22K	5%	1/16W	R2801	1-218-969-11	RES-CHIP	22K	5%	1/16W
R2202	1-218-969-11	RES-CHIP	22K	5%	1/16W	R2802	1-218-969-11	RES-CHIP	22K	5%	1/16W
R2203	1-218-969-11	RES-CHIP	22K	5%	1/16W	R2803	1-218-969-11	RES-CHIP	22K	5%	1/16W
R2204	1-218-965-11	RES-CHIP	10K	5%	1/16W	R2804	1-218-969-11	RES-CHIP	22K	5%	1/16W
R2205	1-218-965-11	RES-CHIP	10K	5%	1/16W	R2805	1-218-969-11	RES-CHIP	22K	5%	1/16W
R2206	1-218-989-11	RES-CHIP	1M	5%	1/16W	R2806	1-218-975-11	RES-CHIP	68K	5%	1/16W
R2209	1-218-989-11	RES-CHIP	1M	5%	1/16W	R2807	1-218-977-11	RES-CHIP	100K	5%	1/16W
R2210	1-218-953-11	RES-CHIP	1K	5%	1/16W	R2808	1-218-975-11	RES-CHIP	68K	5%	1/16W
R2211	1-218-973-11	RES-CHIP	47K	5%	1/16W	R2809	1-218-977-11	RES-CHIP	100K	5%	1/16W
R2501	1-216-807-11	METAL CHIP	68	5%	1/16W	R2810	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2502	1-216-821-11	METAL CHIP	1K	5%	1/16W	R2811	1-218-973-11	RES-CHIP	47K	5%	1/16W
R2503	1-216-821-11	METAL CHIP	1K	5%	1/16W	R2812	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2504	1-216-821-11	METAL CHIP	1K	5%	1/16W	R2813	1-218-977-11	RES-CHIP	100K	5%	1/16W
R2506	1-216-839-11	METAL CHIP	33K	5%	1/16W	R2814	1-218-973-11	RES-CHIP	47K	5%	1/16W
R2507	1-216-835-11	METAL CHIP	15K	5%	1/16W	R2815	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2508	1-218-977-11	RES-CHIP	100K	5%	1/16W	R2816	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2509	1-218-977-11	RES-CHIP	100K	5%	1/16W	R2817	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2510	1-218-977-11	RES-CHIP	100K	5%	1/16W	R2818	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2511	1-218-977-11	RES-CHIP	100K	5%	1/16W	R2819	1-218-973-11	RES-CHIP	47K	5%	1/16W
R2512	1-218-953-11	RES-CHIP	1K	5%	1/16W	R2820	1-218-973-11	RES-CHIP	47K	5%	1/16W
R2513	1-218-953-11	RES-CHIP	1K	5%	1/16W	R3316	1-218-969-11	RES-CHIP	22K	5%	1/16W
R2514	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3317	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R2515	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3318	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R2516	1-218-977-11	RES-CHIP	100K	5%	1/16W	R3319	1-218-969-11	RES-CHIP	22K	5%	1/16W
R2517	1-218-977-11	RES-CHIP	100K	5%	1/16W	R3320	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2518	1-218-977-11	RES-CHIP	100K	5%	1/16W	R3321	1-208-719-11	METAL CHIP	33K	0.5%	1/16W
R2519	1-218-977-11	RES-CHIP	100K	5%	1/16W	R3322	1-218-971-11	RES-CHIP	33K	5%	1/16W
R2520	1-218-977-11	RES-CHIP	100K	5%	1/16W	R3323	1-218-973-11	RES-CHIP	47K	5%	1/16W
R2522	1-218-977-11	RES-CHIP	100K	5%	1/16W	R3324	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2523	1-218-977-11	RES-CHIP	100K	5%	1/16W	R3325	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R2524	1-216-864-11	METAL CHIP	0	5%	1/16W	R3326	1-218-969-11	RES-CHIP	22K	5%	1/16W
R2770	1-208-885-11	METAL CHIP	820	0.5%	1/16W	R3327	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R2771	1-208-703-11	METAL CHIP	6.8K	0.5%	1/16W	R3328	1-208-931-11	METAL CHIP	68K	0.5%	1/16W
R2772	1-208-885-11	METAL CHIP	820	0.5%	1/16W	R3329	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2773	1-208-703-11	METAL CHIP	6.8K	0.5%	1/16W	R3330	1-218-971-11	RES-CHIP	33K	5%	1/16W
R2774	1-208-707-11	METAL CHIP	10K	0.5%	1/16W	R3331	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R2775	1-208-707-11	METAL CHIP	10K	0.5%	1/16W	R3332	1-208-701-11	METAL CHIP	5.6K	0.5%	1/16W
R2776	1-208-707-11	METAL CHIP	10K	0.5%	1/16W	R3333	1-218-974-11	METAL CHIP	56K	0.5%	1/16W
R2777	1-208-935-11	METAL CHIP	100K	0.5%	1/16W	R3334	1-218-974-11	METAL CHIP	56K	0.5%	1/16W
R2778	1-208-707-11	METAL CHIP	10K	0.5%	1/16W	R3335	1-208-715-11	METAL CHIP	22K	0.5%	1/16W
R2779	1-208-707-11	METAL CHIP	10K	0.5%	1/16W	R3336	1-208-720-11	METAL CHIP	36K	0.5%	1/16W
R2780	1-208-935-11	METAL CHIP	100K	0.5%	1/16W	R3337	1-218-945-11	RES-CHIP	220	5%	1/16W
R2781	1-208-711-11	METAL CHIP	15K	0.5%	1/16W	R3338	1-208-912-11	METAL CHIP	11K	0.5%	1/16W
R2782	1-208-707-11	METAL CHIP	10K	0.5%	1/16W	R3339	1-208-709-11	METAL CHIP	12K	0.5%	1/16W
R2783	1-208-711-11	METAL CHIP	15K	0.5%	1/16W	R3340	1-208-697-11	METAL CHIP	3.9K	0.5%	1/16W
R2784	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R3341	1-218-982-11	METAL CHIP	270K	0.5%	1/16W
R2785	1-216-134-00	METAL CHIP	2.2	5%	1/8W	R3342	1-218-941-11	RES-CHIP	100	5%	1/16W
R2786	1-218-973-11	RES-CHIP	47K	5%	1/16W	R3344	1-218-937-11	RES-CHIP	47	5%	1/16W
R2787	1-218-973-11	RES-CHIP	47K	5%	1/16W	R3345	1-218-941-11	RES-CHIP	100	5%	1/16W
R2788	1-208-927-11	METAL CHIP	47K	0.5%	1/16W	R3346	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2789	1-208-927-11	METAL CHIP	47K	0.5%	1/16W	R3347	1-218-953-11	RES-CHIP	1K	5%	1/16W
R2791	1-208-935-11	METAL CHIP	100K	0.5%	1/16W	R3349	1-218-941-11	RES-CHIP	100	5%	1/16W
R2792	1-208-935-11	METAL CHIP	100K	0.5%	1/16W	R3350	1-218-973-11	RES-CHIP	47K	5%	1/16W
R2793	1-208-943-11	METAL CHIP	220K	0.5%	1/16W	R3351	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2795	1-208-943-11	METAL CHIP	220K	0.5%	1/16W	R3352	1-208-921-11	METAL CHIP	27K	0.5%	1/16W
R2796	1-208-707-11	METAL CHIP	10K	0.5%	1/16W	R3353	1-208-907-11	METAL CHIP	6.8K	0.5%	1/16W
R2797	1-208-707-11	METAL CHIP	10K	0.5%	1/16W	R3354	1-208-721-11	METAL CHIP	39K	0.5%	1/16W
R2798	1-208-935-11	METAL CHIP	100K	0.5%	1/16W	R3355	1-218-973-11	RES-CHIP	47K	5%	1/16W
R2799	1-208-935-11	METAL CHIP	100K	0.5%	1/16W	R3356	1-218-969-11	RES-CHIP	22K	5%	1/16W
R2800	1-218-969-11	RES-CHIP	22K	5%	1/16W	R3358	1-218-977-11	RES-CHIP	100K	5%	1/16W

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks
R3359	1-218-973-11	RES-CHIP	47K	5%	1/16W	R4123	1-216-838-11	METAL CHIP	27K	5%	1/16W
R3360	1-218-973-11	RES-CHIP	47K	5%	1/16W	R4124	1-216-864-11	METAL CHIP	0	5%	1/16W
R3361	1-218-969-11	RES-CHIP	22K	5%	1/16W	R4126	1-216-833-11	METAL CHIP	10K	5%	1/16W
R3362	1-218-973-11	RES-CHIP	47K	5%	1/16W	R4127	1-216-842-11	METAL CHIP	56K	5%	1/16W
R3365	1-218-973-11	RES-CHIP	47K	5%	1/16W	R4128	1-216-864-11	METAL CHIP	0	5%	1/16W
R3366	1-218-978-11	METAL CHIP	120K	0.5%	1/16W	R4131	1-218-865-11	METAL CHIP	5.6K	0.5%	1/16W
R3367	1-208-939-11	METAL CHIP	150K	0.5%	1/16W	R4136	1-216-864-11	METAL CHIP	0	5%	1/16W
R3368	1-218-878-11	METAL CHIP	20K	0.5%	1/16W	R4200	1-216-821-11	METAL CHIP	1K	5%	1/16W
R3369	1-218-978-11	METAL CHIP	120K	0.5%	1/16W	R4201	1-216-833-11	METAL CHIP	10K	5%	1/16W
R3370	1-218-974-11	METAL CHIP	56K	0.5%	1/16W	R4202	1-218-878-11	METAL CHIP	20K	0.5%	1/16W
R3371	1-208-713-11	METAL CHIP	18K	0.5%	1/16W	R4203	1-218-873-11	METAL CHIP	12K	0.5%	1/16W
R3372	1-218-978-11	METAL CHIP	120K	0.5%	1/16W	R4204	1-216-857-11	METAL CHIP	1M	5%	1/16W
R3373	1-208-909-11	METAL CHIP	8.2K	0.5%	1/16W	R4205	1-217-671-11	METAL CHIP	1	5%	1/10W
R3374	1-208-943-11	METAL CHIP	220K	0.5%	1/16W	R4206	1-217-671-11	METAL CHIP	1	5%	1/10W
R3376	1-218-973-11	RES-CHIP	47K	5%	1/16W	R4207	1-217-671-11	METAL CHIP	1	5%	1/10W
R3378	1-218-973-11	RES-CHIP	47K	5%	1/16W	R4208	1-217-671-11	METAL CHIP	1	5%	1/10W
R3381	1-218-973-11	RES-CHIP	47K	5%	1/16W	R4209	1-216-841-11	METAL CHIP	47K	5%	1/16W
R3382	1-218-878-11	METAL CHIP	20K	0.5%	1/16W	R4211	1-216-864-11	METAL CHIP	0	5%	1/16W
R3383	1-208-935-11	METAL CHIP	100K	0.5%	1/16W	R4212	1-216-821-11	METAL CHIP	1K	5%	1/16W
R3384	1-218-977-11	RES-CHIP	100K	5%	1/16W	R4223	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R3385	1-218-969-11	RES-CHIP	22K	5%	1/16W	R4300	1-216-835-11	METAL CHIP	15K	5%	1/16W
R3386	1-218-949-11	RES-CHIP	470	5%	1/16W	R4301	1-216-835-11	METAL CHIP	15K	5%	1/16W
R3388	1-218-978-11	METAL CHIP	120K	0.5%	1/16W	R4302	1-216-818-11	METAL CHIP	560	5%	1/16W
R3389	1-208-933-11	METAL CHIP	82K	0.5%	1/16W	R4303	1-216-818-11	METAL CHIP	560	5%	1/16W
R3390	1-208-699-11	METAL CHIP	4.7K	0.5%	1/16W	R4304	1-216-864-11	METAL CHIP	0	5%	1/16W
R3391	1-217-671-11	METAL CHIP	1	5%	1/10W	R4307	1-216-864-11	METAL CHIP	0	5%	1/16W
R3392	1-217-671-11	METAL CHIP	1	5%	1/10W	R4308	1-216-864-11	METAL CHIP	0	5%	1/16W
R3396	1-218-990-11	SHORT	0			R4309	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R3400	1-218-953-11	RES-CHIP	1K	5%	1/16W	R4310	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R3401	1-218-953-11	RES-CHIP	1K	5%	1/16W	R4311	1-218-859-11	METAL CHIP	3.3K	0.5%	1/16W
R3402	1-216-821-11	METAL CHIP	1K	5%	1/16W	R4312	1-218-863-11	METAL CHIP	4.7K	0.5%	1/16W
R3405	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R4313	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R3406	1-218-990-11	SHORT	0			R4314	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R3408	1-216-864-11	METAL CHIP	0	5%	1/16W	R4315	1-216-841-11	METAL CHIP	47K	5%	1/16W
R3409	1-216-864-11	METAL CHIP	0	5%	1/16W	R4316	1-216-841-11	METAL CHIP	47K	5%	1/16W
R3410	1-216-864-11	METAL CHIP	0	5%	1/16W	R4323	1-216-864-11	METAL CHIP	0	5%	1/16W
R3411	1-216-864-11	METAL CHIP	0	5%	1/16W	R4324	1-216-833-11	METAL CHIP	10K	5%	1/16W
R3412	1-216-864-11	METAL CHIP	0	5%	1/16W	R4325	1-216-845-11	METAL CHIP	100K	5%	1/16W
R3414	1-216-864-11	METAL CHIP	0	5%	1/16W	R4326	1-216-833-11	METAL CHIP	10K	5%	1/16W
R3456	1-218-990-11	SHORT	0			R4327	1-216-833-11	METAL CHIP	10K	5%	1/16W
R4100	1-216-049-11	RES-CHIP	1K	5%	1/10W	R4328	1-216-833-11	METAL CHIP	10K	5%	1/16W
R4101	1-216-041-00	METAL CHIP	470	5%	1/10W	R4329	1-216-864-11	METAL CHIP	0	5%	1/16W
R4102	1-216-025-11	RES-CHIP	100	5%	1/10W	R4330	1-216-845-11	METAL CHIP	100K	5%	1/16W
R4103	1-216-841-11	METAL CHIP	47K	5%	1/16W	R4332	1-216-845-11	METAL CHIP	100K	5%	1/16W
R4104	1-218-890-11	METAL CHIP	62K	0.5%	1/16W	R4333	1-216-833-11	METAL CHIP	10K	5%	1/16W
R4105	1-218-883-11	METAL CHIP	33K	0.5%	1/16W	R4334	1-216-833-11	METAL CHIP	10K	5%	1/16W
R4106	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	R4335	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R4107	1-218-865-11	METAL CHIP	5.6K	0.5%	1/16W	R4336	1-216-845-11	METAL CHIP	100K	5%	1/16W
R4108	1-216-864-11	METAL CHIP	0	5%	1/16W	R4337	1-217-671-11	METAL CHIP	1	5%	1/10W
R4109	1-216-864-11	METAL CHIP	0	5%	1/16W	R4339	1-218-863-11	METAL CHIP	4.7K	0.5%	1/16W
R4110	1-216-864-11	METAL CHIP	0	5%	1/16W	R4340	1-218-859-11	METAL CHIP	3.3K	0.5%	1/16W
R4111	1-216-833-11	METAL CHIP	10K	5%	1/16W	R4342	1-217-671-11	METAL CHIP	1	5%	1/10W
R4112	1-216-049-11	RES-CHIP	1K	5%	1/10W	R4400	1-216-833-11	METAL CHIP	10K	5%	1/16W
R4114	1-216-837-11	METAL CHIP	22K	5%	1/16W	R4402	1-216-295-11	SHORT	0		
R4115	1-216-839-11	METAL CHIP	33K	5%	1/16W	R4403	1-216-836-11	METAL CHIP	18K	5%	1/16W
R4116	1-218-878-11	METAL CHIP	20K	0.5%	1/16W	R4405	1-216-845-11	METAL CHIP	100K	5%	1/16W
R4117	1-216-834-11	METAL CHIP	12K	5%	1/16W	R4501	1-218-839-11	METAL CHIP	470	0.5%	1/16W
R4118	1-216-864-11	METAL CHIP	0	5%	1/16W	R4503	1-216-833-11	METAL CHIP	10K	5%	1/16W
R4120	1-216-864-11	METAL CHIP	0	5%	1/16W	R4504	1-216-833-11	METAL CHIP	10K	5%	1/16W
R4122	1-216-864-11	METAL CHIP	0	5%	1/16W	R4505	1-216-833-11	METAL CHIP	10K	5%	1/16W

VI-156

VL-034

VO-012

XL-003

Ref. No.	Part No.	Description	Remarks		
R4506	1-216-864-11	METAL CHIP	0	5%	1/16W
R4507	1-216-821-11	METAL CHIP	1K	5%	1/16W
R4508	1-218-899-11	METAL CHIP	150K	0.5%	1/16W
R4509	1-218-871-11	METAL CHIP	10K	0.5%	1/16W
R4511	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R4512	1-216-809-11	METAL CHIP	100	5%	1/16W
R4513	1-216-809-11	METAL CHIP	100	5%	1/16W
R4514	1-216-809-11	METAL CHIP	100	5%	1/16W
R4515	1-217-671-11	METAL CHIP	1	5%	1/10W
R4516	1-217-671-11	METAL CHIP	1	5%	1/10W
R4518	1-218-879-11	METAL CHIP	22K	0.5%	1/16W
R4519	1-218-879-11	METAL CHIP	22K	0.5%	1/16W
R4520	1-218-897-11	METAL CHIP	120K	0.5%	1/16W
R4522	1-218-897-11	METAL CHIP	120K	0.5%	1/16W
R4526	1-218-629-91	METAL CHIP	180	5%	1W
R4527	1-218-629-91	METAL CHIP	180	5%	1W
R4528	1-218-629-91	METAL CHIP	180	5%	1W
R4529	1-218-629-91	METAL CHIP	180	5%	1W
R4532	1-217-671-11	METAL CHIP	1	5%	1/10W
R4533	1-217-671-11	METAL CHIP	1	5%	1/10W
R4534	1-217-671-11	METAL CHIP	1	5%	1/10W
R4535	1-217-671-11	METAL CHIP	1	5%	1/10W
R4536	1-216-864-11	METAL CHIP	0	5%	1/16W
R4537	1-216-864-11	METAL CHIP	0	5%	1/16W

< TRANSFORMER >

T3300	1-435-456-21	TRANSFORMER, DC-DC CONVERTER
T3301	1-435-518-21	TRANSFORMER, DC-DC CONVERTER

< VIBRATOR >

X001	1-781-641-21	VIBRATOR, CRYSTAL (13.5MHz)
X301	1-767-399-11	VIBRATOR, CRYSTAL (24.576MHz)
X501	1-760-655-41	VIBRATOR, CRYSTAL (20MHz)
X701	1-767-586-21	VIBRATOR, CRYSTAL (27MHz)
X801	1-767-980-21	VIBRATOR, CERAMIC (20MHz)
X1101	1-767-980-21	VIBRATOR, CERAMIC (20MHz)
X1102	1-760-458-21	VIBRATOR, CRYSTAL (32.768KHz)
X1401	1-781-770-21	VIBRATOR, LITHIUM NIOBATE (7.375MHz)
X1402	1-760-655-41	VIBRATOR, CRYSTAL (20MHz)

A-7074-541-A VL-034 BOARD, COMPLETE

(Ref.No.;1000Series)

< CAPACITOR >

C841	1-127-715-11	CERAMIC CHIP	0.22uF
C842	1-127-715-11	CERAMIC CHIP	0.22uF

< CONNECTOR >

* CN481	1-560-364-00	CONNECTOR POST HEADER,ILG (2P)
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Ref. No.	Part No.	Description	Remarks		
	A-7074-557-A	VO-012 BOARD, COMPLETE	*****		
			(Ref.No.;1000Series)		
		< CONNECTOR >			
* CN201	1-778-787-13	CONNECTOR, COAXIAL (BNC TYPE)	(AUDIO OUT)		
CN202	1-691-550-11	PIN, CONNECTOR (1.5MM)(SMD) 3P			
		< DIODE >			
D201	8-719-062-16	DIODE 01ZA8.2(TPL3)			
		< RESISTOR >			
R201	1-216-864-11	METAL CHIP	0	5%	1/16W
	A-7074-551-A	XL-003 BOARD, COMPLETE	*****		
			(Ref.No.;1000Series)		
		< CAPACITOR >			
C801	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C802	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C803	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C804	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C805	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C806	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C807	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C808	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C809	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C810	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C811	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C812	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C813	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C814	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C815	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C816	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C817	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C818	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C819	1-128-996-11	ELECT CHIP	4.7uF	20%	50V
C820	1-128-996-11	ELECT CHIP	4.7uF	20%	50V
C821	1-128-996-11	ELECT CHIP	4.7uF	20%	50V
C822	1-128-996-11	ELECT CHIP	4.7uF	20%	50V
C823	1-128-996-11	ELECT CHIP	4.7uF	20%	50V
C824	1-128-996-11	ELECT CHIP	4.7uF	20%	50V
C825	1-128-996-11	ELECT CHIP	4.7uF	20%	50V
C826	1-128-996-11	ELECT CHIP	4.7uF	20%	50V
C827	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C828	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C829	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C830	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C831	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C832	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C833	1-125-926-91	TANTAL. CHIP	4.7uF	20%	6.3V
C834	1-125-926-91	TANTAL. CHIP	4.7uF	20%	6.3V
C835	1-125-926-91	TANTAL. CHIP	4.7uF	20%	6.3V

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C836	1-125-926-91	TANTAL. CHIP 4.7uF 20%	6.3V	R806	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
C837	1-125-926-91	TANTAL. CHIP 4.7uF 20%	6.3V	R807	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
C838	1-125-926-91	TANTAL. CHIP 4.7uF 20%	6.3V	R808	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
C839	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	R809	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
C840	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	R810	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
C841	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	R811	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
C842	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	R812	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
C843	1-164-156-11	CERAMIC CHIP 0.1uF	25V	R813	1-216-033-00	METAL CHIP 220 5%	1/10W
C844	1-164-156-11	CERAMIC CHIP 0.1uF	25V	R814	1-216-037-00	METAL CHIP 330 5%	1/10W
C845	1-117-919-11	TANTAL. CHIP 10uF 20%	6.3V	R815	1-216-295-11	SHORT 0	
C846	1-117-919-11	TANTAL. CHIP 10uF 20%	6.3V	R816	1-216-033-00	METAL CHIP 220 5%	1/10W
C847	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V	R817	1-216-037-00	METAL CHIP 330 5%	1/10W
C848	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V	R818	1-216-295-11	SHORT 0	
C849	1-104-913-11	TANTAL. CHIP 10uF 20%	16V	R819	1-216-035-00	METAL CHIP 270 5%	1/10W
C850	1-104-913-11	TANTAL. CHIP 10uF 20%	16V	R820	1-216-035-00	METAL CHIP 270 5%	1/10W
C851	1-164-156-11	CERAMIC CHIP 0.1uF	25V	R821	1-216-035-00	METAL CHIP 270 5%	1/10W
C852	1-164-156-11	CERAMIC CHIP 0.1uF	25V	R822	1-216-035-00	METAL CHIP 270 5%	1/10W
< CONNECTOR >				R823	1-220-222-11	RES-CHIP 4.7K 5%	1/2W
CN801	1-750-788-11	CONNECTOR (XLR TYPE) 3P (CH1 AUDIO IN)		R824	1-220-222-11	RES-CHIP 4.7K 5%	1/2W
CN802	1-750-788-11	CONNECTOR (XLR TYPE) 3P (CH2 AUDIO IN)		R825	1-216-845-11	METAL CHIP 100K 5%	1/16W
CN803	1-691-550-11	PIN, CONNECTOR (1.5MM)(SMD) 3P		R826	1-216-845-11	METAL CHIP 100K 5%	1/16W
* CN804	1-691-591-11	PIN, CONNECTOR (1.5MM) (SMD)8P		R827	1-216-845-11	METAL CHIP 100K 5%	1/16W
< DIODE >				R828	1-216-845-11	METAL CHIP 100K 5%	1/16W
D801	8-719-073-01	DIODE MA111-(K8).S0		R829	1-216-845-11	METAL CHIP 100K 5%	1/16W
D802	8-719-073-01	DIODE MA111-(K8).S0		R830	1-216-845-11	METAL CHIP 100K 5%	1/16W
D803	8-719-073-01	DIODE MA111-(K8).S0		R831	1-216-845-11	METAL CHIP 100K 5%	1/16W
D804	8-719-073-01	DIODE MA111-(K8).S0		R832	1-216-845-11	METAL CHIP 100K 5%	1/16W
D805	8-719-073-01	DIODE MA111-(K8).S0		R833	1-218-863-11	METAL CHIP 4.7K 0.5%	1/16W
D806	8-719-073-01	DIODE MA111-(K8).S0		R834	1-218-863-11	METAL CHIP 4.7K 0.5%	1/16W
D807	8-719-073-01	DIODE MA111-(K8).S0		R835	1-218-863-11	METAL CHIP 4.7K 0.5%	1/16W
D808	8-719-073-01	DIODE MA111-(K8).S0		R836	1-218-863-11	METAL CHIP 4.7K 0.5%	1/16W
< IC >				R837	1-218-897-11	METAL CHIP 120K 0.5%	1/16W
IC801	8-759-111-56	IC uPC4572G2-E2		R838	1-218-897-11	METAL CHIP 120K 0.5%	1/16W
IC802	8-759-111-56	IC uPC4572G2-E2		R839	1-216-825-11	METAL CHIP 120 5%	1/16W
IC803	8-759-111-56	IC uPC4572G2-E2		R840	1-216-825-11	METAL CHIP 120 5%	1/16W
IC804	8-759-111-56	IC uPC4572G2-E2		R841	1-216-825-11	METAL CHIP 120 5%	1/16W
< COIL >				R842	1-216-825-11	METAL CHIP 120 5%	1/16W
L801	1-414-398-11	INDUCTOR 10uH		R843	1-218-887-11	METAL CHIP 47K 0.5%	1/16W
L802	1-414-398-11	INDUCTOR 10uH		R844	1-218-863-11	METAL CHIP 4.7K 0.5%	1/16W
L803	1-414-398-11	INDUCTOR 10uH		R845	1-218-885-11	METAL CHIP 39K 0.5%	1/16W
L804	1-414-398-11	INDUCTOR 10uH		R846	1-218-887-11	METAL CHIP 47K 0.5%	1/16W
L805	1-414-398-11	INDUCTOR 10uH		R847	1-218-863-11	METAL CHIP 4.7K 0.5%	1/16W
L806	1-414-398-11	INDUCTOR 10uH		R848	1-218-885-11	METAL CHIP 39K 0.5%	1/16W
L807	1-414-854-11	INDUCTOR 1MH		R849	1-218-863-11	METAL CHIP 4.7K 0.5%	1/16W
L808	1-414-854-11	INDUCTOR 1MH		R850	1-218-863-11	METAL CHIP 4.7K 0.5%	1/16W
< RESISTOR >				R851	1-218-863-11	METAL CHIP 4.7K 0.5%	1/16W
R801	1-216-057-00	METAL CHIP 2.2K 5%	1/10W	R852	1-218-863-11	METAL CHIP 4.7K 0.5%	1/16W
R802	1-216-057-00	METAL CHIP 2.2K 5%	1/10W	R853	1-218-863-11	METAL CHIP 4.7K 0.5%	1/16W
R803	1-216-057-00	METAL CHIP 2.2K 5%	1/10W	R854	1-218-863-11	METAL CHIP 4.7K 0.5%	1/16W
R804	1-216-057-00	METAL CHIP 2.2K 5%	1/10W	R855	1-218-863-11	METAL CHIP 4.7K 0.5%	1/16W
R805	1-216-057-00	METAL CHIP 2.2K 5%	1/10W	R856	1-218-863-11	METAL CHIP 4.7K 0.5%	1/16W
< SWITCH >				S801	1-762-825-11	SWITCH, SLIDE (LINE/MIC)	
				S802	1-762-825-11	SWITCH, SLIDE (LINE/MIC)	

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remarks</u>
		ACCESSORIES	

1-475-950-21		REMOTE COMMANDER (RMT-811)	
1-575-334-11		CORD, CONNECTION (AV CABLE)	
1-792-826-11		CORD, CONNECTION (USB CABLE)	
3-053-056-01		LID, BATTERY CASE (FOR RMT-811)	
3-060-458-11		MANUAL, INSTRUCTION (PICTURE GEAR 4.1 LITE) (ENGLISH/RUSSIAN)	
3-060-458-21		MANUAL, INSTRUCTION (PICTURE GEAR 4.1 LITE) (FRENCH/GERMAN)	
3-060-476-01		PICTURE GEAR 4.1 LITE (SYSTEM DISK)	
3-061-255-01		SYSTEM DISK (MSAC-US1)	
3-062-061-12		MANUAL, INSTRUCTION (AUTO LOGO INSERT FOR CORYRIGHT PROTECTION) (ENGLISH/FRENCH/GERMAN/ITALIAN)	
3-064-678-11		MANUAL, INSTRUCTION (ENGLISH)(250)	
3-064-678-21		MANUAL, INSTRUCTION (FRENCH)(250)	
3-064-678-31		MANUAL, INSTRUCTION (ENGLISH)(250P)	
3-064-678-41		MANUAL, INSTRUCTION (FRENCH)(250P)	
3-064-678-51		MANUAL, INSTRUCTION (GERMAN)(250P)	
3-064-678-61		MANUAL, INSTRUCTION (ITALIAN)(250P)	
8-814-298-90		MICROPHONE ECM-NV1	
A-7033-740-A		MEMORY STICK MSA-4A	
A-7096-180-A		MSAC-US1 MEMORY STICK READER/WITER	

SONY®

ELECTRONIC VIEWFINDER

DXF-801
DXF-801CE

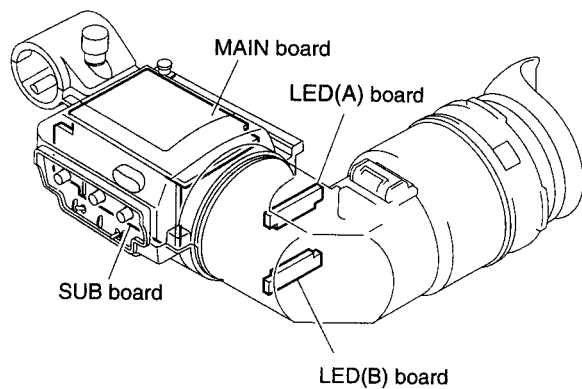
SERVICE MANUAL

Attached Manual

Section 1

Service Information

1-1. Board Layout



1-2. Replacement of Main Parts

1-2-1. Notes on Replacement of MAIN Board

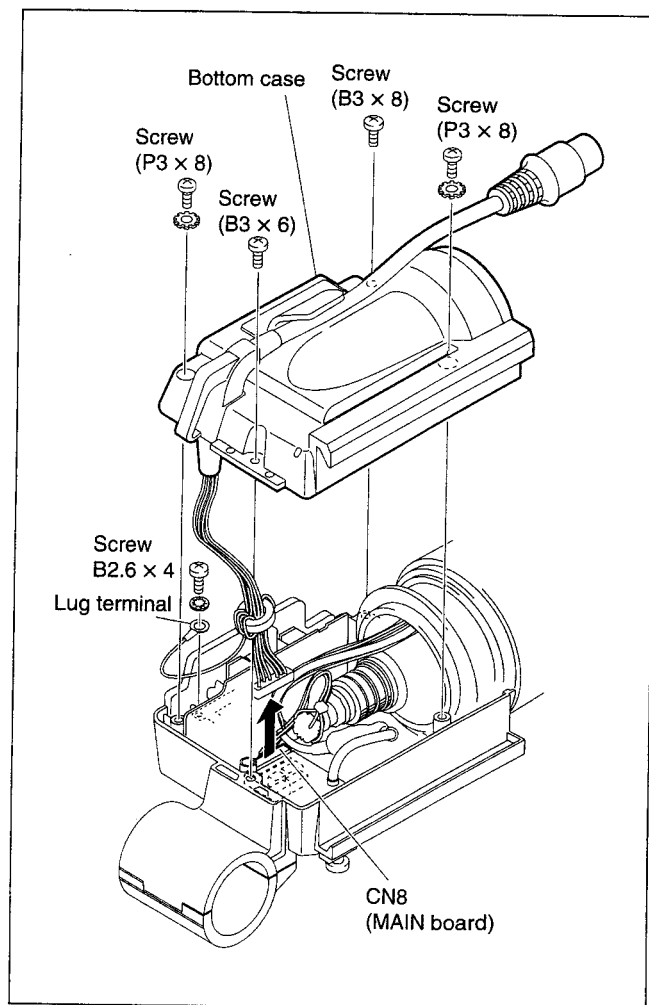
To replace the MAIN board, perform adjustment referring to Section 2. "Alignment".

1-2-2. Replacement of CRT/DY Assembly

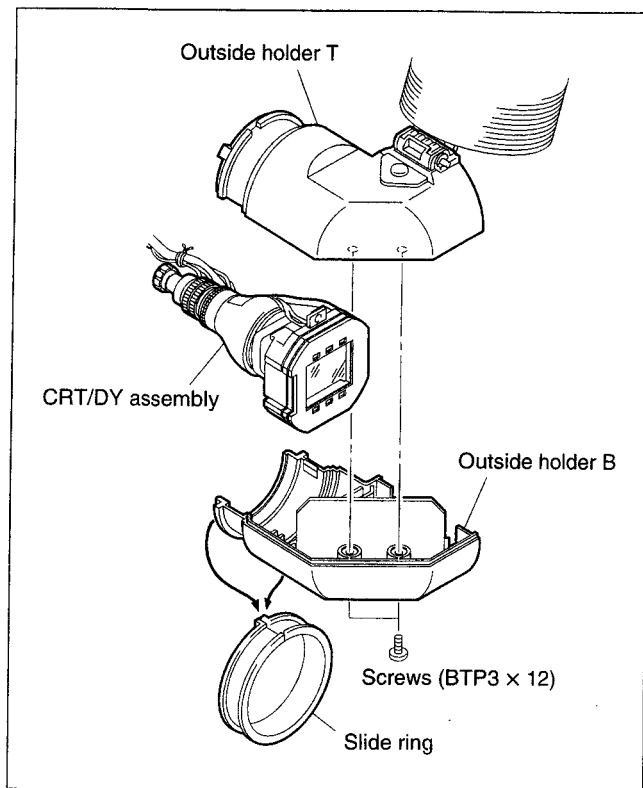
Note

If a deflection yoke is replaced, you should replace assembly of CRT and deflection yoke (CRT/DY assembly).

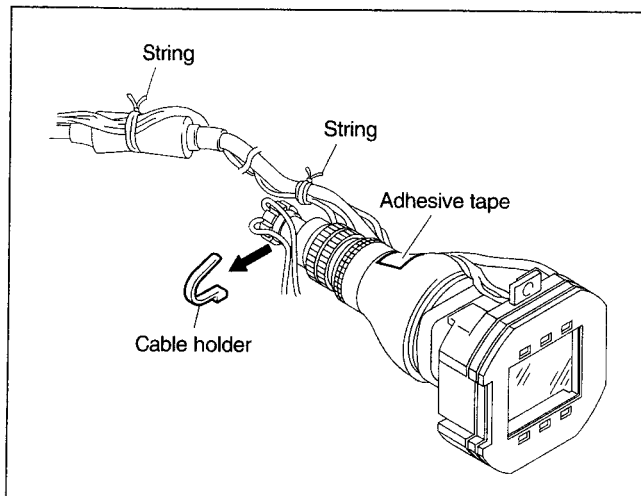
1. Remove four screws and remove the bottom case.
2. Remove the screw (B2.6 × 4). Disconnect connector CN8 from the MAIN board.



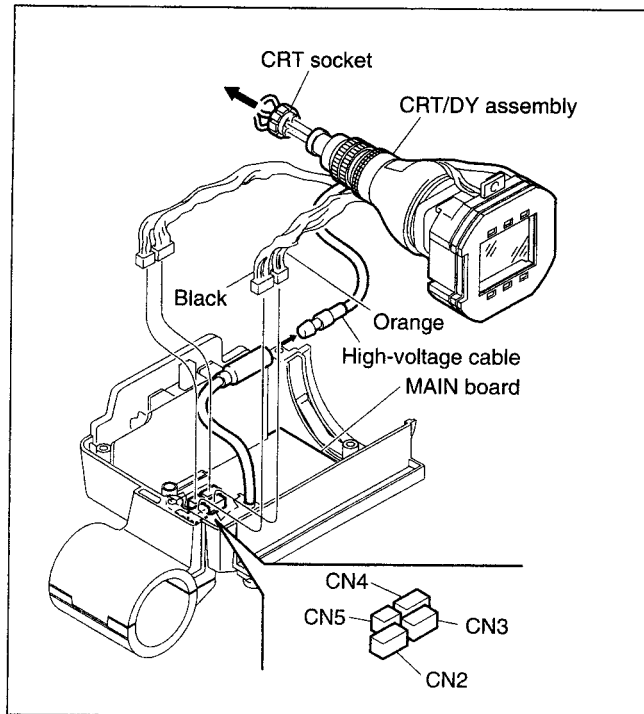
3. Remove the slide ring. Remove two screws and remove the CRT/DY assembly from outside holders B and T.



4. Untie two strings and remove an adhesive tape and a cable holder.



5. Disconnect four connectors CN2, 3, 4 and 5 on the MAIN board and high-voltage cable. Disconnect the CRT socket from the CRT/DY assembly.



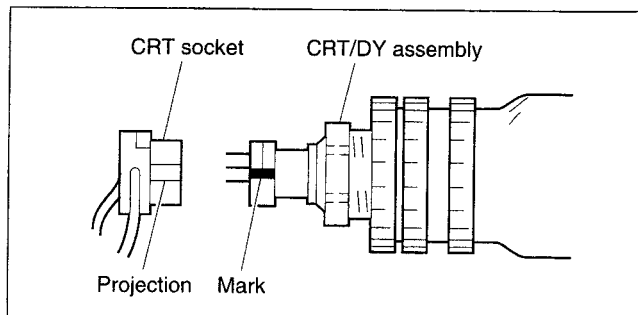
Note

In disconnecting, carefully pull the CRT socket backward, as the pins of CRT/DY assembly is liable to bend.

6. When installing a new CRT/DY assembly, reverse the above procedures.

Note

In reconnecting the CRT socket, be sure to match a projection of the CRT socket with a mark of the CRT/DY assembly.



1-3. Replacement of VF Loupe

Optional VF loupe

There are two kind of VF loupes as optional accessory.
Use a VF loupe to match your visibility range.

VF loupe for aged eyes;

–2D to +1D (Sony part No. 3-725-276-01)

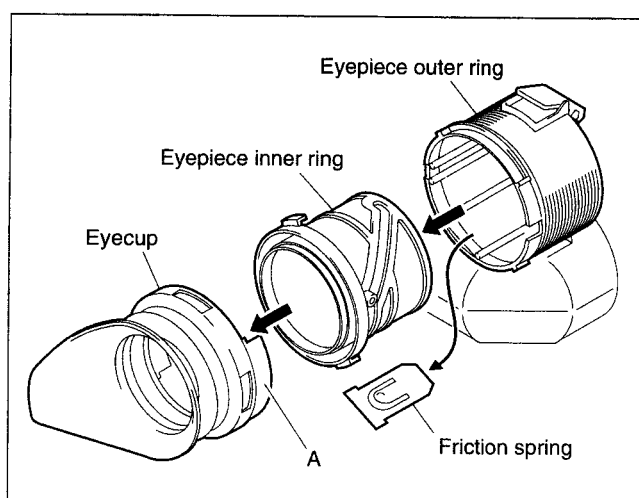
–0.5 to +3D (Sony part No. 3-176-501-01)

(For reference) Standard ; –3D to 0D

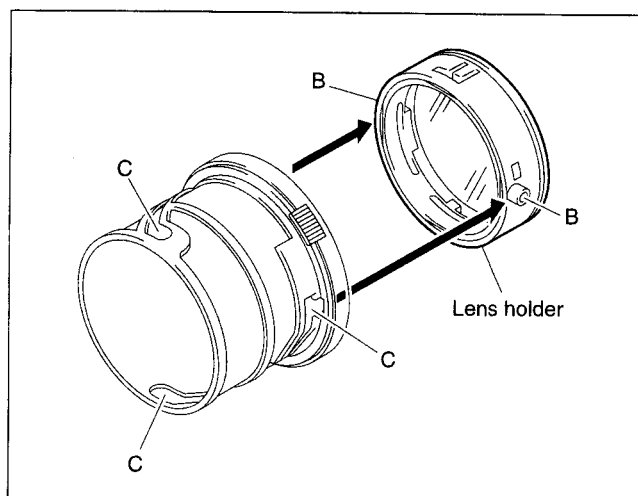
1. Insert a slotted screwdriver to the clearance between portion A and eyepiece outer ring as shown in figure. Remove eyecup by lifting its portion A and remove eyepiece inner ring.

Note

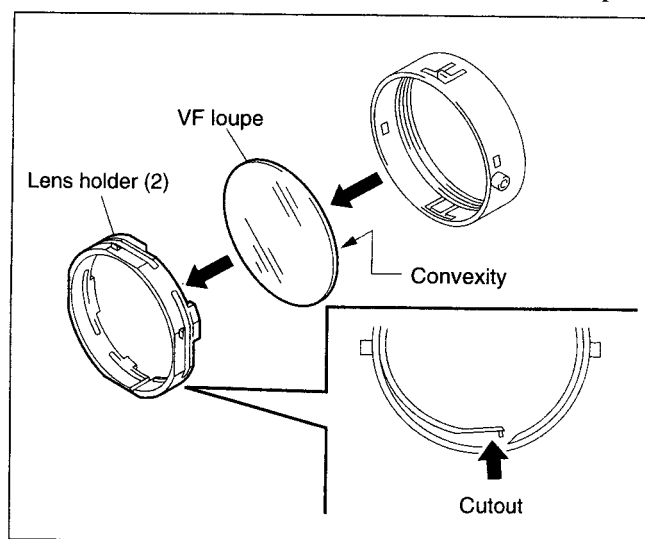
When removing eyepiece inner ring, the friction spring is liable to remove.



2. Hold the portion B as shown in figure. Remove the lens holder along the groove C.



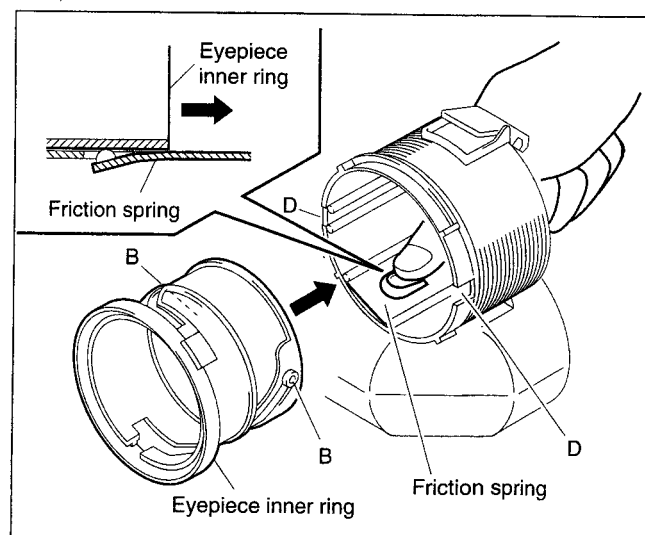
3. Remove one side of cutout portion as shown in figure. Pull out the lens holder (2) and remove the VF loupe.



4. When installing the VF loupe, reverse the above procedures.

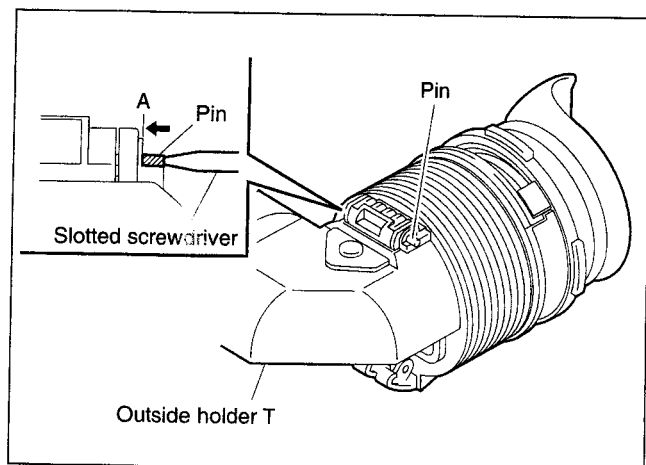
Notes

- When installing the VF loupe, ensure the direction of VF loupe. (Refer to step 3.)
- When installing eyepiece inner ring, ensure the inserting position of friction spring and hold it by finger. Match boss of portion D with B and insert the inner ring to the outer ring.

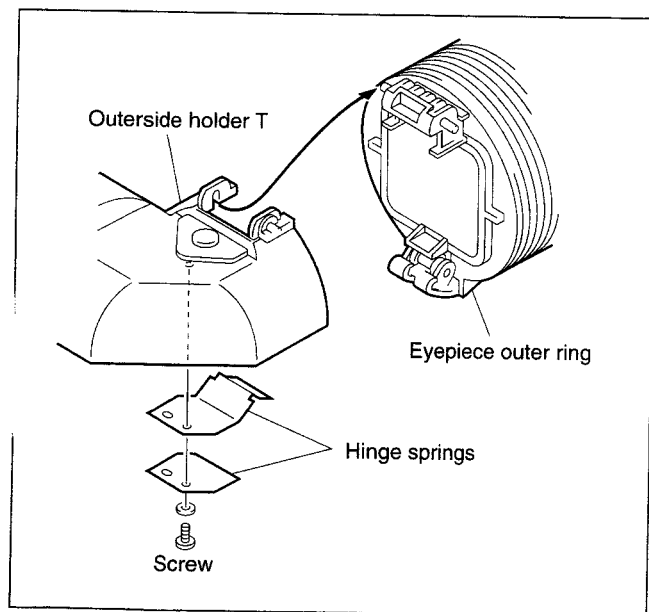


1-4. Replacement of Outside Holder T and Eyepiece Outer Ring

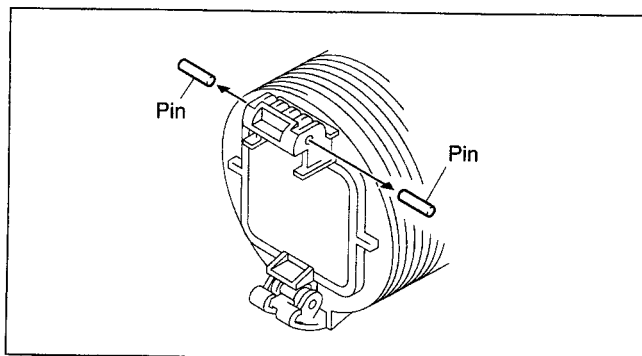
1. Remove the outside holder T referring to Section 1-2-2. "Replacement of CRT/DY assembly".
2. Push two pins to portion A by slotted screwdriver as shown in figure.



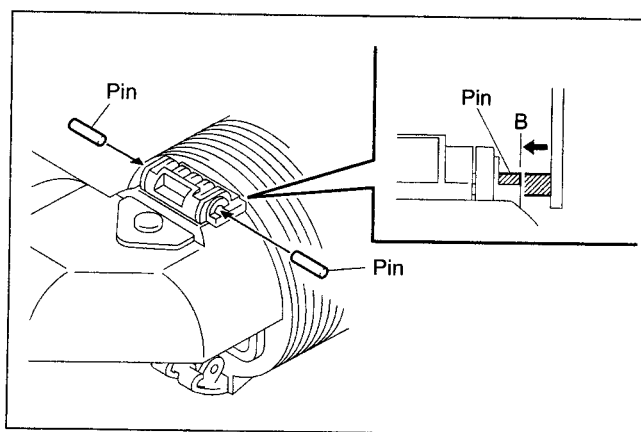
3. Remove a screw, washer and two hinge springs. Then, remove the outside holder T and eyepiece outer ring as shown in figure arrow.



4. Pull out two pins.



5. Replace outside holder T or eyepiece outer ring to new one. Insert two pins to portion B by slotted screwdriver as shown in figure.



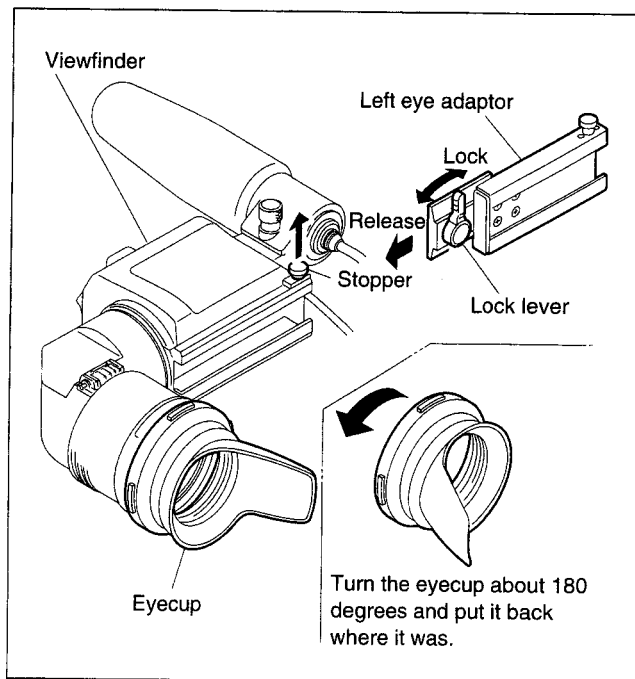
1-5. Changing the Viewfinder Correspond to Left Eye

Part Required (sold separately)

Left eye adaptor (Sony Part No.: A-8267-181-A)

Attaching Procedures

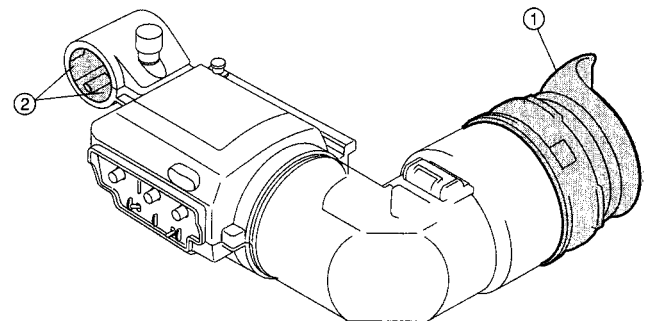
1. Remove the eyecup. Turn the eyecup about 180 degrees as shown in figure and put it back where it was.
2. While pushing up the stopper of the viewfinder, attach the left eye adaptor. At this time, pull the lock lever to release locking.
3. Fix the left eye adaptor by pushing the lock lever vertically direction.



1-6. Recommended Replacement Parts

Parts listed below are recommended replacement parts. They are subject to cracks with the lapse of time. Check sometimes by visual, and replace as necessary.

No.	Description	Sony P/N
①	EYE CUP	3-723-079-0X
②	MIC CUSHION	3-608-303-0X *1



*1 : It is recommended that the MIC cushions are replaced in pairs. In this case, please order two pieces.

Section 2

Alignment

2-1. Preparation

2-1-1. Equipment Required

Tools

- Pattern box PTB-500
Sony part number : J-6029-140-B
- Resolution chart
Sony part number : J-6026-100-A
- White window chart

Measuring equipment

- Oscilloscope
- Waveform monitor
- Digital voltmeter
- Frequency counter
- Pattern generator

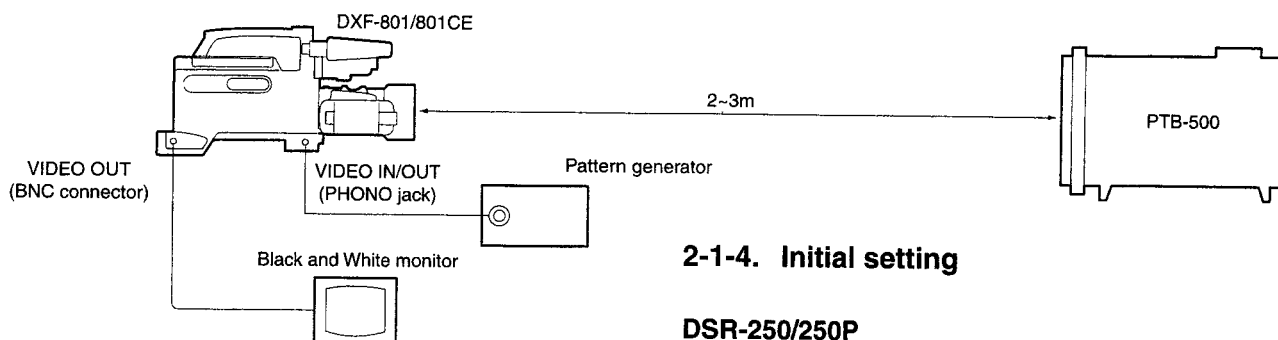
Related equipment

- Digital camcorder DSR-250/250P
- B/W monitor PVM-91/91CE or equivalent

2-1-2. Notes on Adjustment

Because DSR-250/250P can select the aspect ratio 16:9 or 4:3, some adjustment items need changing the setting of the aspect ratio. (Refer to Section 2-2-6, Picture Frame Adjustment.) Changing of the aspect ratio is done in the 16:9 WIDE setting of the CAMERA SET menu. When the aspect ratio is not specified, perform adjustment in the 4:3 mode (16:9 WIDE → OFF).

2-1-3. Connecting Diagram



2-1-4. Initial setting

DSR-250/250P

- MODE switch → CAMERA
- AUTO MODE switch → OFF
- ATW switch → OFF
- WHITE BAL switch → PRESET
- 5600K/3200K → 3200K
- AGC switch → OFF
- GAIN switch → L
- IRIS switch → AUTO
- DIGITAL EFFECT switch → OFF
- ZEBRA switch → OFF
- PROG. SCAN (MANUAL SET menu) → OFF
- SET UP (MANUAL SET menu) → 0%
- 16:9 WIDE (CAMERA SET menu) → OFF

Viewfinder

- CONTRAST control → A full turn clockwise
- BRIGHT control → Mechanical center

2-2. Viewfinder System Adjustment

2-2-1. +9.5 V Adjustment

Note

- Perform the adjustment only when measured voltage is more than $\pm 1\%$ with respect to the specified voltage.
- When this adjustment is carried out, all of following adjustments must be confirmed.

Equipment : Digital voltmeter
Test point : TP1/MAIN board
Adjusting point : ⚙RV1 (VO-ADJ)/MAIN board
Specification : $+9.5 \pm 0.05$ V dc

2-2-2. Heater Voltage Pre-Adjustment

Note

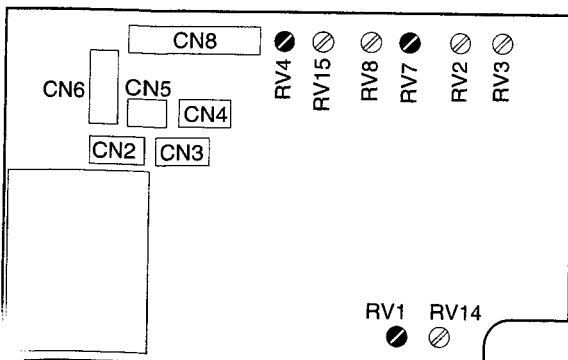
When this adjustment is carried out, "2-2-4. Horizontal Hold Adjustment", "2-2-5. Focus Adjustment", "2-2-6. Picture Frame Adjustment" and "2-2-7. Operational Amplifier Output Adjustment" must be confirmed.

Equipment : Digital voltmeter (AC mode)
Test point : TP5 $\leftrightarrow$ TP6/MAIN board
Specification : 0.65 ± 0.03 Vrms

Adjustment Procedure

If not met the specification, adjust ⚙RV4 (VH-ADJ)/MAIN board.

MAIN BOARD



- COMPONENT SIDE -

2-2-3. Vertical Hold Adjustment

Note

- Perform adjustment with removing R76 resistor on the SUB board. After adjustment, re-mount R76 resistor.
- Perform adjustment with connecting Pin 2 of RV20 (CONTRAST) on SUB board and GND with a jumper wire. After adjustment, disconnect the jumper wire.

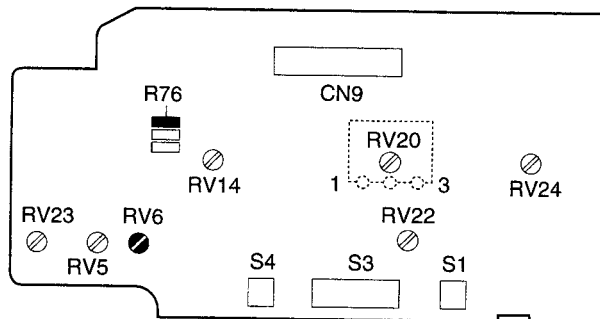
Equipment : Frequency counter

Preparation

⚙RV7 (V-SIZE)/MAIN board $\rightarrow$ Mechanical center
 (If ⚙RV7 (V-SIZE)/MAIN board is marked, not turn ⚙RV7 (V SIZE)/MAIN board.)

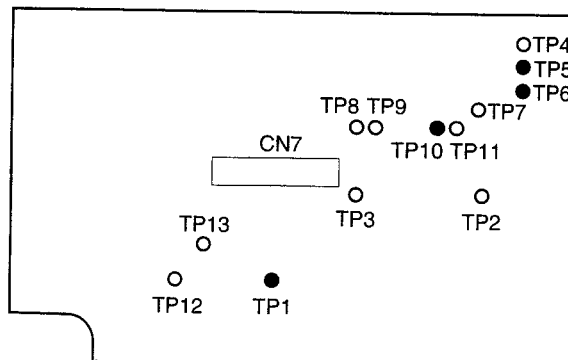
Test point : TP 10/MAIN board
Adjusting point : ⚙RV6 (V-HOLD)/SUB board
Specification : NTSC : 48 ± 0.5 Hz
 PAL : 38 ± 0.5 Hz

SUB BOARD



- COMPONENT SIDE -

MAIN BOARD



- SOLDERING SIDE -

2-2-4. Horizontal Hold Adjustment

Note

When this adjustment is carried out, "2-2-2. Heater Voltage Pre-Adjustment" must be confirmed.

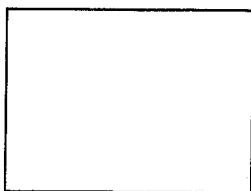
Object : White Window chart
Equipment : Waveform monitor, Oscilloscope
Trigger : CH2/Oscilloscope

Preparation

[DSR-250/250P]

1. Shoot the White Window chart and adjust the lens zoom so that the picture on the monitor screen becomes all white.

Monitor Screen



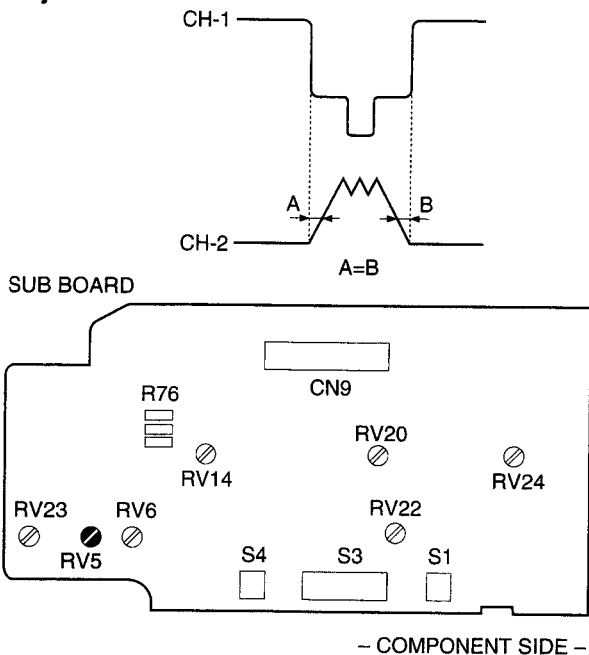
2. IRIS switch → MAN

Adjust the iris control for the white level at VIDEO OUT connector on the camera is 100 ± 2 IRE (PAL : 700 ± 14 mV).

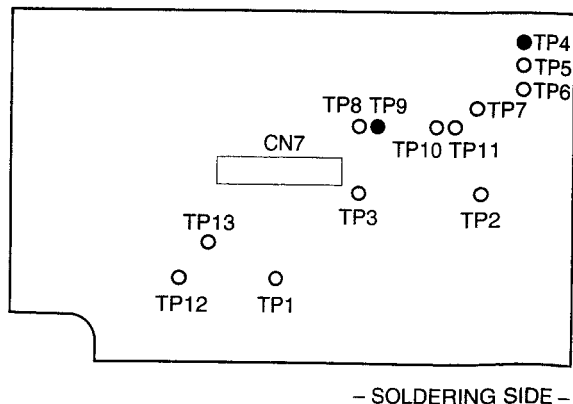
Test point : CH1 TP4 (G1)/MAIN board
 CH2 TP9 (+H DEF)/MAIN board

Adjusting point : RV5 (H-HOLD)/SUB board

Adjustment :



MAIN BOARD



2-2-5. Focus Adjustment

Note

- “2-2-6. Picture Frame Adjustment” and this adjustment affect each other. Repeat these adjustments until both specifications are met.
- When these adjustments are carried out, “2-2-2. Heater Voltage Pre-Adjustment” must be confirmed again.

Object : Resolution chart
Equipment : Waveform monitor

Preparation

[DSR-250/250P]

- IRIS switch → MAN

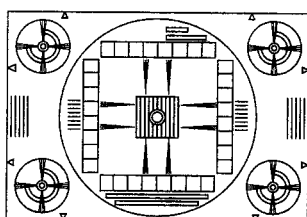
[Viewfinder]

- BRIGHT control → Mechanical center
- CONTRAST control → Fully clockwise ⌚
- PEAKING control → Fully counterclockwise ⌚

Adjustment Procedure

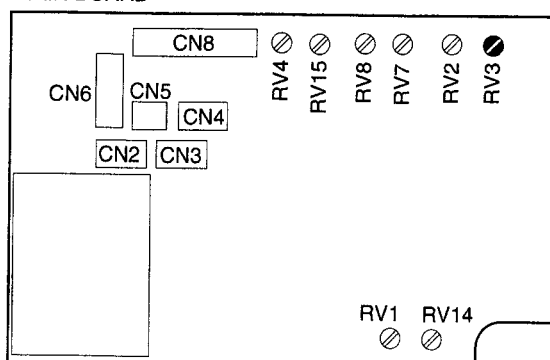
1. Adjust the lens zoom so that the resolution chart frame coincides the underscanned picture frame on the monitor screen.
2. Set the resolution on the monitor screen to the best state with the lens focus.

Monitor Screen



3. Adjust the iris control for the white level at VIDEO OUT connector on the camera is 100 ± 2 IRE (PAL : 700 ± 14 mV).
4. Adjust ⦿RV3 (FOCUS)/MAIN board so that the picture on the viewfinder screen is best focused.

MAIN BOARD



– COMPONENT SIDE –

2-2-6. Picture Frame Adjustment

Note

- “2-2-5. Focus Adjustment”, “2-2-7. Operational Amplifier Output Adjustment” and this adjustment affect each other. Repeat these adjustments until both specifications are met.
- When these adjustments are carried out, “2-2-2. Heater Voltage Pre-Adjustment” must be confirmed again.

Object : Resolution chart
Equipment : Waveform monitor

Preparation

[DSR-250/250P]

- IRIS switch → MAN

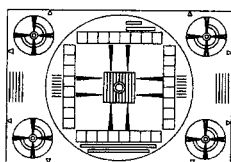
[Viewfinder]

- Remove the eye cap from the viewfinder.
- BRIGHT control → Mechanical center
- CONTRAST control → Mechanical center
- PEAKING control → Fully counterclockwise ☉

Adjustment Procedure

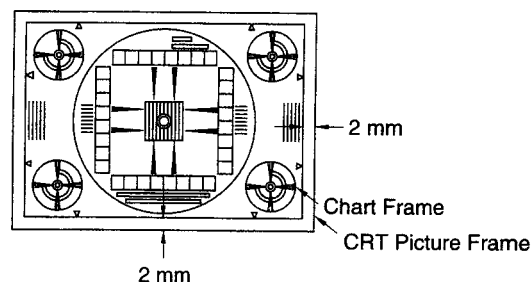
1. Adjust the lens zoom so that the resolution chart frame touches the underscanned picture frame on the monitor screen.
2. Set the resolution on the monitor screen to the best state with the lens focus.
3. Adjust the iris control for the white level at VIDEO OUT connector on the camera is 100 ± 2 IRE (PAL : 700 ± 14 mV).

Monitor Screen



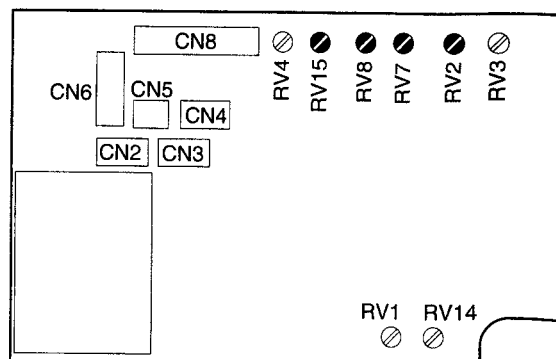
4. Adjust ⦿RV2 (H-SIZE)/MAIN board so that the H size of resolution chart is underscanned by approximately 2 mm from the CRT picture frame.
5. Adjust ⦿RV7 (V-SIZE)/MAIN board so that the V size of resolution chart is underscanned by approximately 2 mm from the CRT picture frame.

Viewfinder Screen



6. Adjust ⦿RV8 (V-LIN)/MAIN board so that the distortion of each circle at the four corners of resolution chart is minimized.
7. Repeat procedure 4 to 6 until the specification are met.
8. Select ON mode from 16:9 WIDE on the CAMERA SET menu.
9. Adjust ⦿RV15 (V-SIZE : WIDE)/MAIN board so that the circle in the center of resolution chart becomes a circle.
10. Select OFF mode from 16:9 WIDE on the CAMERA SET menu.
11. Confirm that the procedure 5 and procedure 6. If not met, readjust the procedure 4 through procedure 10.

MAIN BOARD



— COMPONENT SIDE —

2-2-7. Operational Amplifier Output Adjustment

Note

When this adjustment is carried out, "2-2-5. Focus Adjustment" and "2-2-2. Heater Voltage Pre-Adjustment" must be confirmed again.

Equipment : Digital voltmeter

Preparation

[DSR-250/250P]

- IRIS switch → MAN
- Lens iris → Close "C"

[Viewfinder]

- BRIGHT control → Fully counterclockwise ⤿
- CONTRAST control → Fully counterclockwise ⤿
- PEAKING control → Fully counterclockwise ⤿

Test point : TP12/MAIN board

Adjusting point : ⚙RV14 (OP-ADJ)/MAIN board

Specification : 6.0 ± 0.5 Vdc

2-2-8. Bright Calibration Adjustment

Preparation

[DSR-250/250P]

- MODE switch → VTR
- After adjustment, reset to "CAMERA" position.
- Connect a pattern generator to VIDEO IN/OUT jack and input a white 100% color bar signal.

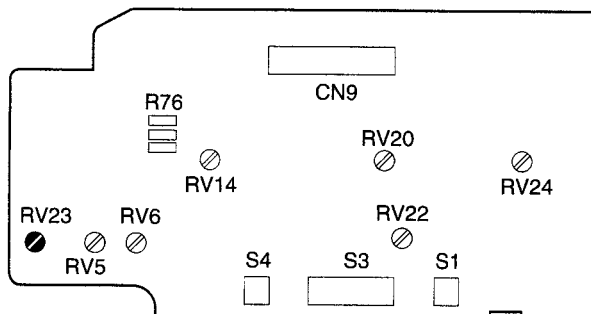
[Viewfinder]

- BRIGHT control → Fully counterclockwise ⤿
- CONTRAST control → Fully counterclockwise ⤿

Adjustment Procedure

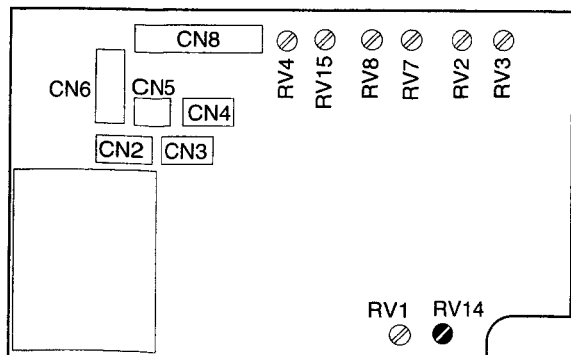
Adjust the picture by turning ⚙RV23 (SUB-BRIGHT)/SUB board clockwise ⤿ from fully counterclockwise ⤿ position so that the picture of the white (100%) part just appears on the monitor screen.

SUB BOARD



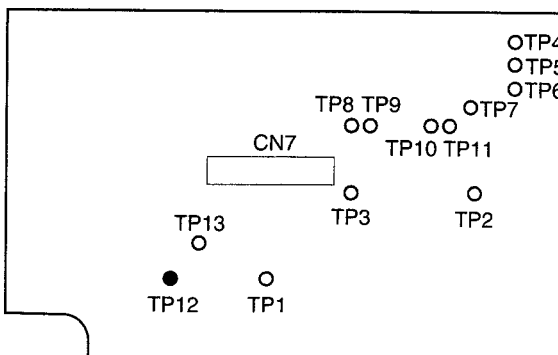
– COMPONENT SIDE –

MAIN BOARD



– COMPONENT SIDE –

MAIN BOARD

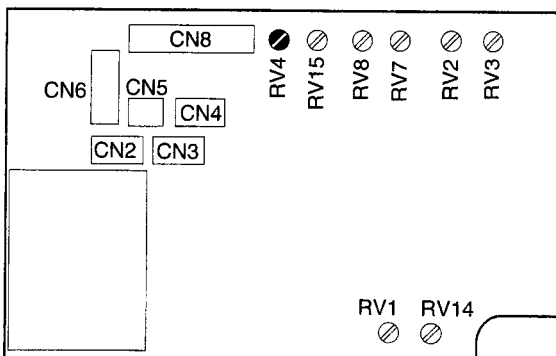


– SOLDERING SIDE –

2-2-9. Heater Voltage Adjustment

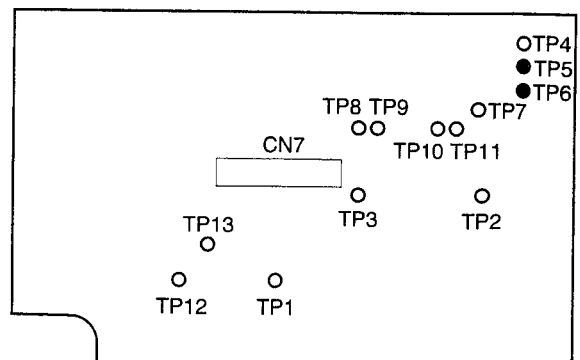
Equipment : Digital voltmeter (AC mode)
Test point : TP5 ↔ TP6/MAIN board
Adjusting point : ●RV4 (VH-ADJ)/MAIN board
Specification : 0.65 ± 0.03 Vrms

MAIN BOARD



– COMPONENT SIDE –

MAIN BOARD



– SOLDERING SIDE –

Section 3

Spare Parts

3-1. Notes on Repair Parts

1. Safety Related Components Warning

WARNING

Components marked $\triangle$ are critical to safe operation.
Therefore, specified parts should be used in the case of replacement.

2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.

Parts list has the present standardized repair parts.

3. Stock of Parts

Parts marked with “o” at SP (Supply Code) column of the spare parts list may not be stocked. Therefore, the delivery date will be delayed.

4. Harness

Harnesses with no part number are not registered as spare parts.

In need of repair, get components shown in the list and repair using them.

5. Destination Representation

The part indicated “For J/UC/CE” in the spare parts list is used in the unit written below.

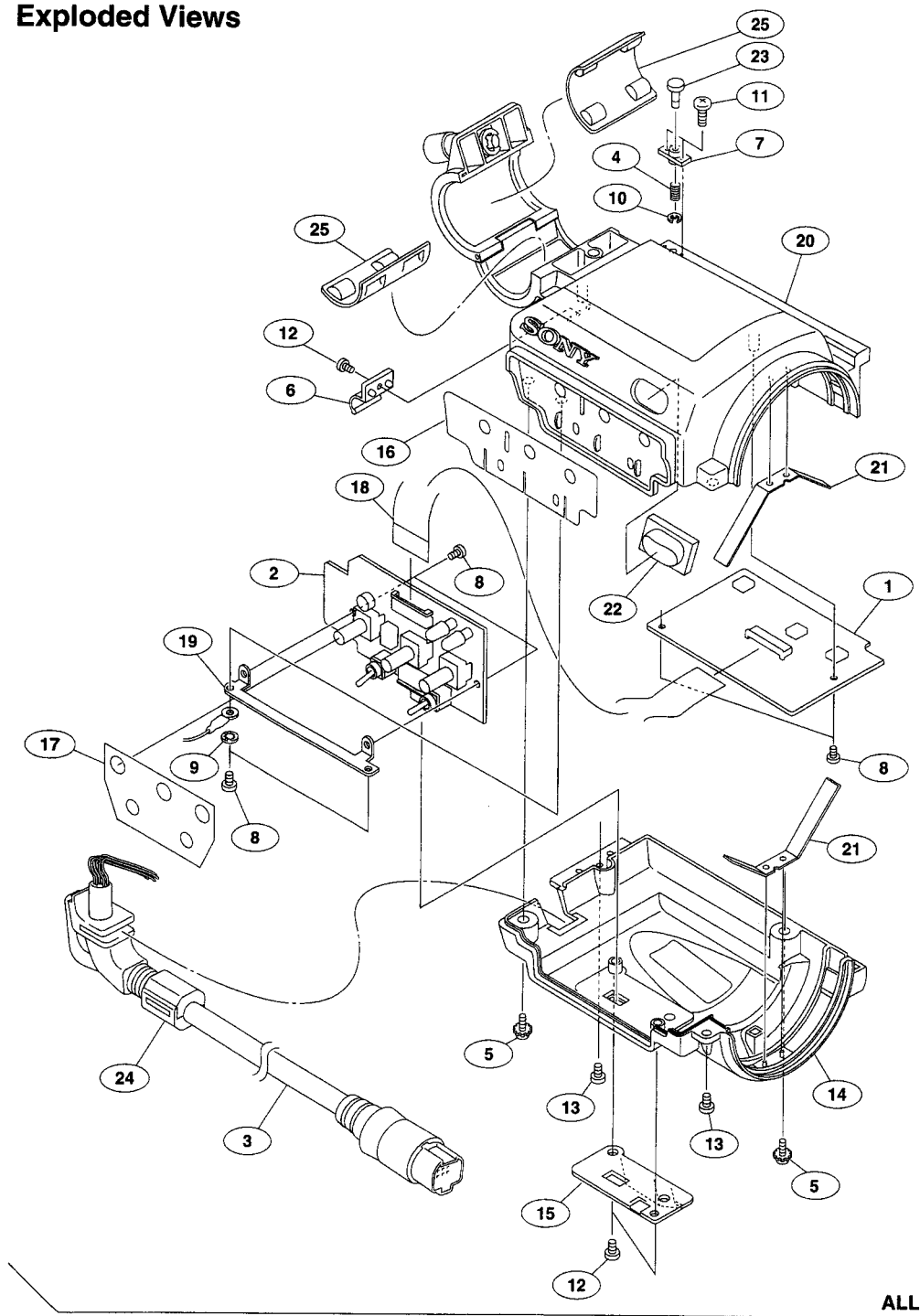
For J: The part is used in a unit for Japan.

For UC: The part is used in a unit for the U.S.A. and Canada.

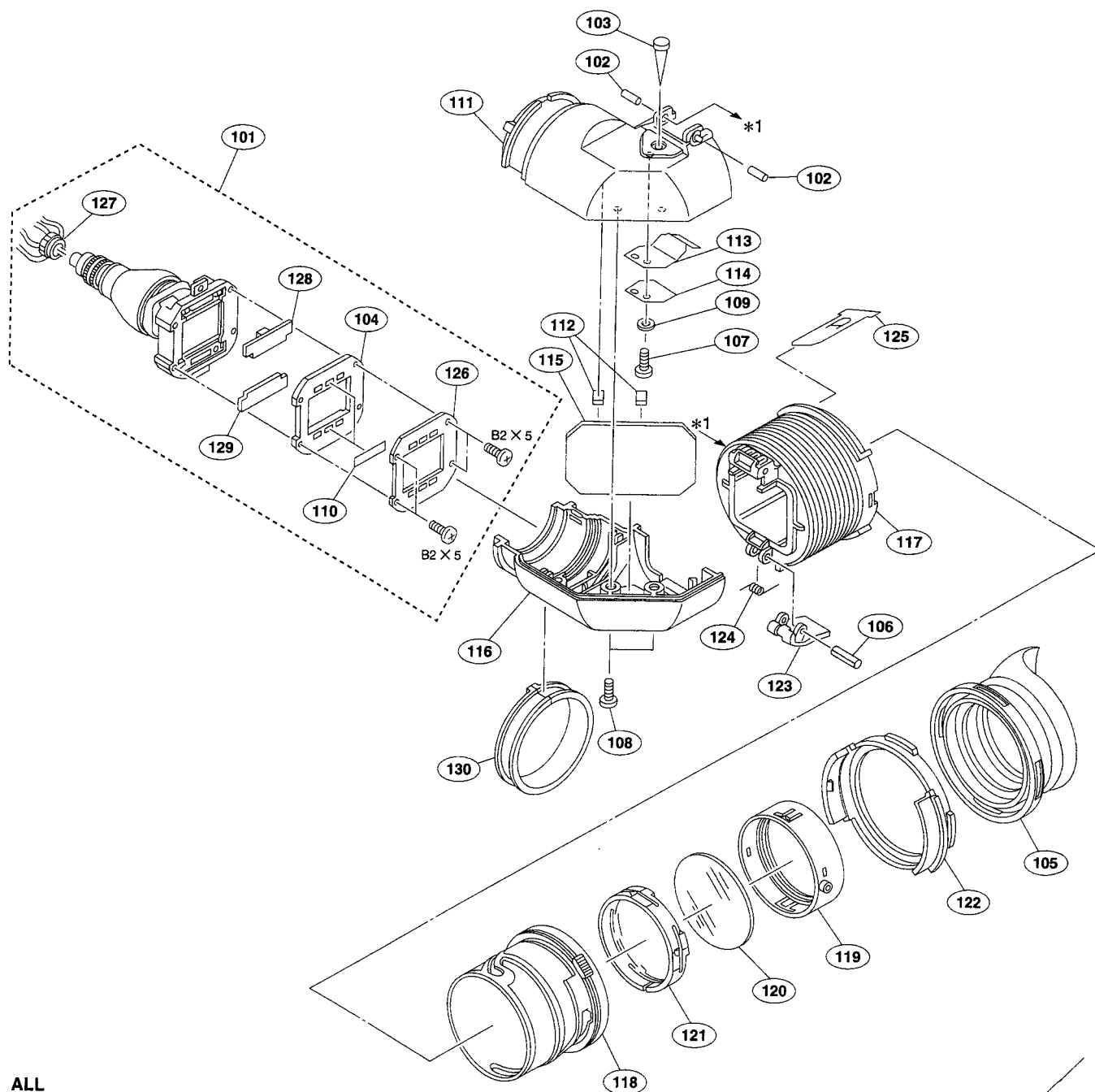
For CE: The part is used in a unit for regions except the above countries.

Exploded views

3-2. Exploded Views



No.	Part No.	SP Description	No.	Part No.	SP Description
ALL	A-8279-329-A	s DXF-801 [VF ASSY (UCJ)]	12	7-627-556-38	s SCREW P2.6X4
ALL	A-8326-150-A	s DXF-801CE [VF ASSY (CE)]	13	7-682-547-09	s SCREW B3X6
1	Δ 1-761-318-11	o MOUNTED CIRCUIT BOARD, MAIN	14	9-885-000-94	o CASE, BOTTOM
2	Δ 1-761-319-11	o MOUNTED CIRCUIT BOARD, SUB (J, UC)	15	9-885-000-95	o CLAMP, CABLE
	Δ 1-761-319-21	o MOUNTED CIRCUIT BOARD, SUB (CE)	16	9-885-000-96	o LABEL, VF
3	1-792-554-12	s CABLE, VF	17	9-885-000-97	o PLATE, PARTING
4	2-277-466-01	s SPRING, COMPRESSION	18	9-885-000-98	o FLEXIBLE FLAT CABLE
5	3-178-214-11	s SCREW B3X8	19	9-885-000-99	o STAY, BOARD
6	3-678-684-01	s HOLDER, CABLE	20	9-885-001-60	o TOP CASE/MIC HOLDER ASSY
7	3-710-008-02	s HOUSING STOPPER	21	9-933-326-01	o SPRING, PLATE
8	7-621-773-86	s SCREW B2.6X4	22	9-933-327-01	o COVER, TALLY
9	7-623-307-07	s LW 2.6, TYPE A	23	9-933-328-01	s KNOB, STOPPER
10	7-624-102-04	s STOPRING 1.5, TYPE-E	24	1-469-821-11	o CORE, FERRITE (CE)
11	7-627-554-18	s SCREW P2X3.5	25	3-608-303-01	s RUBBER



No.	Part No.	SP Description	No.	Part No.	SP Description
ALL	A-8279-329-A	s DXF-801 [VF ASSY (UCJ)]	116	9-933-340-02	s HOLDER B, OUTSIDE
ALL	A-8326-150-A	s DXF-801CE [VF ASSY (CE)]	117	9-933-341-02	o OUTER RING, EYEPiece
101	Δ 1-251-463-11	s CRT/DY+CONNECTOR ASSY	118	9-933-342-01	o INNER RING, EYEPiece
102	2-249-361-01	o PIN, PARALLEL	119	9-933-343-01	o HOLDER, LENS
103	2-362-365-00	s FOOT, RUBBER	120	9-933-344-01	s LOUPE, VF (-3D to 0D)
104	3-176-022-03	o SPACER (B), MASK		3-176-501-01	s LOUPE (aged eyes), VF (-0.5D to +3D)
105	3-723-079-03	s EYECAP		3-725-276-01	s LOUPE (aged eyes), VF (-2D to +1D)
106	7-626-314-31	s SPRING PIN 2X16	121	9-933-345-01	o HOLDER (2), LENS
107	7-627-556-38	s SCREW P2.6X4	122	9-933-346-03	s HOLDER, EYECAP
108	7-685-548-19	s SCREW BTP3X12	123	9-933-347-02	s STOPPER
109	7-688-002-12	s WASHER M2.6	124	9-933-348-01	s SPRING, HELICAL TORSION
110	9-933-305-01	o PLATE, SPREAD	125	9-936-099-01	o SPRING, FRICTION
111	9-933-335-02	s HOLDER T, OUTSIDE	126	9-939-449-01	s ORNAMENTAL PLATE, MASK
112	9-933-336-01	s MOLT (2)	127	9-939-450-01	o SOCKET, CRT
113	9-933-337-01	o SPRING (1), HINGE	128	9-939-451-01	o MOUNTED CIRCUIT BOARD, LED (A)
114	9-933-338-01	o SPRING (2), HINGE	129	9-939-453-02	o MOUNTED CIRCUIT BOARD, LED (B)
115	9-933-339-01	o MIRROR	130	9-994-820-01	o RING, SLIDE

3-3. Electrical Parts List

LED(A) BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	9-933-451-01	s PRINTED CIRCUIT BOARD, LED(A)
1pc	9-933-312-01	s HARNESS (4-CORE)
CN10	9-933-310-01	s PIN, CONNECTOR 4P
LED3	8-719-026-39	s LED CL-150UR-CD RED
LED4	8-719-026-16	s LED CL-150D-CD ORG
LED5	8-719-026-39	s LED CL-150UR-CD RED

LED(B) BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	9-939-453-01	s PRINTED CIRCUIT BOARD, LED(B)
1pc	9-939-452-01	s HARNESS (4-CORE)
CN11	9-933-310-01	s PIN, CONNECTOR 4P
LED6	8-719-026-16	s LED CL-150D-CD ORG
LED7	8-719-026-39	s LED CL-150UR-CD RED
LED8	8-719-026-39	s LED CL-150UR-CD RED

MAIN BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-761-318-11	o MOUNTED CIRCUIT BOARD, MAIN
1pc	9-936-098-01	s CASE, SHIELD
C1	9-904-851-01	s TANTALUM, CHIP 10uF 20% 16V
C2	9-904-845-01	s TANTALUM, CHIP 22uF 20% 10V
C4	9-933-314-01	s ELECT 100uF 20% 20V
C5	9-904-851-01	s TANTALUM, CHIP 10uF 20% 16V
C6	9-885-001-13	s CERAMIC, CHIP 1uF 10V
C7	9-904-851-01	s TANTALUM, CHIP 10uF 20% 16V
C8	9-885-001-14	s CERAMIC, CHIP 390pF 5% 50V
C9	9-933-315-01	s ELECT 100uF 20% 16V
C10	1-104-912-11	s TANTALUM, CHIP 3.3uF 20% 16V
C11	9-885-001-15	s CERAMIC, CHIP 0.1uF 16V
C12	1-104-823-11	s TANTALUM, CHIP 47uF 20% 16V
C13	9-885-001-17	s CERAMIC, CHIP 580pF 50V
C14	1-163-021-91	s CERAMIC, CHIP 0.01uF 10% 50V
C15	9-885-001-18	s CERAMIC, CHIP 47pF 50V
C16	9-885-001-19	s CERAMIC, CHIP 0.1uF 16V
C17	9-885-001-19	s CERAMIC, CHIP 0.1uF 16V
C18	9-885-001-19	s CERAMIC, CHIP 0.1uF 16V
C19	9-885-001-15	s CERAMIC, CHIP 0.1uF 16V
C20	1-136-291-11	s FILM 6800pF 5% 100V
C21	9-885-001-19	s CERAMIC, CHIP 0.1uF 16V
C22	9-904-854-01	s CERAMIC 470PF 10% 2KV
C23	9-904-853-01	s CERAMIC, CHIP 0.1uF 20% 100V
C24	1-111-134-11	s ELECT 27uF 20% 63V
C25	1-163-135-00	s CERAMIC, CHIP 560pF 5% 50V
C26	1-104-823-11	s TANTALUM, CHIP 47uF 20% 16V
C48	9-980-617-01	s ELECT 100uF 16V
C49	9-885-001-20	s CERAMIC, CHIP 220pF 50V
C50	1-104-912-11	s TANTALUM, CHIP 3.3uF 20% 16V
C51	9-885-001-21	s CERAMIC, CHIP 0.015uF 50V
C52	9-885-001-15	s CERAMIC, CHIP 0.1uF 16V
C53	9-904-851-01	s TANTALUM, CHIP 10uF 20% 16V
C55	9-980-618-01	s ELECT 220uF 20% 6.3V
C56	9-885-001-22	s CERAMIC, CHIP 100pF 50V
C57	9-885-001-23	s CERAMIC, CHIP 1000pF 50V
C58	9-885-001-22	s CERAMIC, CHIP 100pF 50V
C60	9-885-001-24	s CERAMIC, CHIP 0.01uF 50V
C61	9-885-001-22	s CERAMIC, CHIP 100pF 50V
C62	1-163-243-11	s CERAMIC, CHIP 47pF 5% 50V
C63	9-885-001-18	s CERAMIC, CHIP 47pF 50V
C64	9-885-001-18	s CERAMIC, CHIP 47pF 50V
C65	1-163-243-11	s CERAMIC, CHIP 47pF 5% 50V
C66	1-163-251-11	s CERAMIC, CHIP 100pF 5% 50V
C67	1-163-251-11	s CERAMIC, CHIP 100pF 5% 50V
C68	1-163-243-11	s CERAMIC, CHIP 47pF 5% 50V
C69	1-163-243-11	s CERAMIC, CHIP 47pF 5% 50V
C70	1-163-243-11	s CERAMIC, CHIP 47pF 5% 50V
C71	1-163-243-11	s CERAMIC, CHIP 47pF 5% 50V
CN2	9-933-322-01	s PIN, CONNECTOR 4P
CN3	9-933-322-01	s PIN, CONNECTOR 4P
CN4	9-994-792-01	s PIN, CONNECTOR 3P
CN5	9-994-793-01	s PIN, CONNECTOR 2P
CN6	1-564-707-11	s PIN, CONNECTOR 5P
CN7	1-569-531-11	s HOUSING, CONNECTOR 20P
CN8	1-580-538-11	s PIN, CONNECTOR (PC BOARD) 18P

(MAIN BOARD)

Ref. No. or Q'ty	Part No.	SP Description
CP1	Δ 9-904-864-01	s RESISTOR, FUSE 2.2
D2	8-719-941-86	s DIODE DAN202U
D3	8-719-989-76	s DIODE SC802-04
D4	8-719-941-09	s DIODE DAP202U
D6	8-719-941-09	s DIODE DAP202U
D7	8-719-941-09	s DIODE DAP202U
D8	8-719-941-09	s DIODE DAP202U
D9	8-719-820-41	s DIODE 1SS302
D10	8-719-976-56	s DIODE RLS245
D11	8-719-976-56	s DIODE RLS245
D12	8-719-919-16	s DIODE ESJA57-03
D13	8-719-976-56	s DIODE RLS245
D14	8-719-820-41	s DIODE 1SS302
D20	8-719-976-56	s DIODE RLS245
FB1	1-239-077-11	s FILTER, EMI
FBT	Δ 1-439-419-12	s TRANSFORMER, FLYBACK
HLC	1-459-823-13	s COIL, HORIZONTAL LINEARITY
IC2	8-759-268-33	s IC SN74HC595ADBR
IC6	Δ 8-759-360-66	s IC TL1453CPWR
IC7	8-759-209-54	s IC TC4S01F
IC8	8-759-075-66	s IC TA75S01F
IC9	8-759-209-57	s IC TC4S69F
IC10	8-759-981-44	s IC BA15218F-K
L1	9-933-321-01	s INDUCTOR, CHIP 100uH
Q1	8-729-905-38	s TRANSISTOR 2SC4081T106R
Q2	8-729-905-38	s TRANSISTOR 2SC4081T106R
Q3	8-729-907-26	s TRANSISTOR IMX1
Q4	8-729-907-46	s TRANSISTOR IMZ1
Q5	8-729-024-66	s TRANSISTOR 2SB1201-S
Q6	8-729-927-90	s TRANSISTOR 2SA1579-RS
Q7	8-729-106-60	s TRANSISTOR 2SB1115A-YQ
Q8	8-729-013-08	s TRANSISTOR 2SK1113
Q9	8-729-013-08	s TRANSISTOR 2SK1113
Q12	8-729-905-38	s TRANSISTOR 2SC4081T106R
Q13	8-729-907-46	s TRANSISTOR IMZ1
Q14	8-729-422-12	s TRANSISTOR 2SK664
R1	1-216-049-11	s METAL, CHIP 1K 5% 1/10W
R2	1-216-073-00	s METAL, CHIP 10K 5% 1/10W
R3	1-216-049-11	s METAL, CHIP 1K 5% 1/10W
R4	Δ 1-216-081-00	s METAL, CHIP 22K 5% 1/10W
R5	1-216-085-00	s METAL, CHIP 33K 5% 1/10W
R6	1-216-073-00	s METAL, CHIP 10K 5% 1/10W
R9	Δ 1-218-887-11	s METAL, CHIP 47K 0.5% 1/16W
R10	1-218-847-11	s METAL, CHIP 1K 0.5% 1/16W
R11	1-218-847-11	s METAL, CHIP 1K 0.5% 1/16W
R12	Δ 1-218-871-11	s METAL, CHIP 10K 0.5% 1/16W
R13	Δ 1-218-887-11	s METAL, CHIP 47K 0.5% 1/16W
R14	Δ 1-218-887-11	s METAL, CHIP 47K 0.5% 1/16W
R15	Δ 1-218-855-11	s METAL, CHIP 2.2K 0.5% 1/16W
R16	Δ 1-218-855-11	s METAL, CHIP 2.2K 0.5% 1/16W
R17	1-218-863-11	s METAL, CHIP 4.7K 0.5% 1/16W
R18	Δ 1-218-855-11	s METAL, CHIP 2.2K 0.5% 1/16W
R19	Δ 1-218-855-11	s METAL, CHIP 2.2K 0.5% 1/16W
R20	Δ 1-218-851-11	s METAL, CHIP 1.5K 0.5% 1/16W
R21	9-885-001-25	s METAL, CHIP 750

(MAIN BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R22	Δ 1-218-856-11	s METAL, CHIP 2.4K 0.5% 1/16W
R23	1-216-051-00	s METAL, CHIP 1.2K 5% 1/10W
R24	1-218-823-11	s METAL, CHIP 100 0.5% 1/16W
R25	Δ 1-218-855-11	s METAL, CHIP 2.2K 0.5% 1/16W
R26	Δ 1-216-053-00	s METAL, CHIP 1.5K 5% 1/10W
R28	1-216-073-00	s METAL, CHIP 10K 5% 1/10W
R29	1-218-871-11	s METAL, CHIP 10K 0.5% 1/16W
R30	Δ 1-218-851-11	s METAL, CHIP 1.5K 0.5% 1/16W
R31	Δ 1-216-053-00	s METAL, CHIP 1.5K 5% 1/10W
R32	1-216-049-11	s METAL, CHIP 1K 5% 1/10W
R33	1-216-097-00	s METAL, CHIP 100K 5% 1/10W
R34	1-218-895-11	s METAL, CHIP 100K 0.5% 1/16W
R35	1-218-895-11	s METAL, CHIP 100K 0.5% 1/16W
R36	1-218-871-11	s METAL, CHIP 10K 0.5% 1/16W
R37	1-216-044-00	s METAL, CHIP 620 5% 1/10W
R38	1-216-041-11	s METAL, CHIP 470 5% 1/10W
R39	1-216-049-11	s METAL, CHIP 1K 5% 1/10W
R40	Δ 1-218-874-11	s METAL, CHIP 13K 0.5% 1/16W
R41	Δ 1-218-851-11	s METAL, CHIP 1.5K 0.5% 1/16W
R42	1-216-061-00	s METAL, CHIP 3.3K 5% 1/10W
R43	1-216-073-00	s METAL, CHIP 10K 5% 1/10W
R45	9-885-001-26	s METAL, CHIP 0
R46	1-216-073-00	s METAL, CHIP 10K 5% 1/10W
R47	1-216-073-00	s METAL, CHIP 10K 5% 1/10W
R48	1-218-887-11	s METAL, CHIP 47K 0.5% 1/16W
R50	9-885-001-27	s METAL, CHIP 2.2 1/4W
R51	Δ 1-216-081-00	s METAL, CHIP 22K 5% 1/10W
R52	Δ 1-218-877-11	s METAL, CHIP 18K 0.5% 1/16W
R53	1-218-859-11	s METAL, CHIP 3.3K 0.5% 1/16W
R54	Δ 1-218-879-11	s METAL, CHIP 22K 0.5% 1/16W
R55	Δ 1-218-879-11	s METAL, CHIP 22K 0.5% 1/16W
R56	1-216-060-00	s METAL, CHIP 3K 5% 1/10W
R57	1-216-097-00	s METAL, CHIP 100K 5% 1/10W
R58	1-216-049-11	s METAL, CHIP 1K 5% 1/10W
R59	Δ 1-216-077-00	s METAL, CHIP 15K 5% 1/10W
R60	Δ 1-218-875-11	s METAL, CHIP 15K 0.5% 1/16W
R61	1-216-121-00	s METAL, CHIP 1M 5% 1/10W
R62	1-216-121-00	s METAL, CHIP 1M 5% 1/10W
R64	1-216-049-11	s METAL, CHIP 1K 5% 1/10W
R65	1-216-009-00	s METAL, CHIP 22 5% 1/10W
R66	1-211-977-11	s METAL, CHIP 22 0.5% 1/16W
R67	9-904-861-01	s CARBON, CHIP 3.3M 1% 1/8W
R68	9-904-861-01	s CARBON, CHIP 3.3M 1% 1/8W
R69	9-904-861-01	s CARBON, CHIP 3.3M 1% 1/8W
R70	9-904-862-01	s CARBON, CHIP 91K 1% 1/8W
R71	1-216-025-00	s METAL, CHIP 100 5% 1/10W
R72	1-216-033-00	s METAL, CHIP 220 5% 1/10W
R73	1-216-061-00	s METAL, CHIP 3.3K 5% 1/10W
R97	1-216-308-00	s METAL, CHIP 4.7 5% 1/10W
R98	1-218-847-11	s METAL, CHIP 1K 0.5% 1/16W
R99	1-218-859-11	s METAL, CHIP 3.3K 0.5% 1/16W
R100	1-216-065-00	s METAL, CHIP 4.7K 5% 1/10W
R101	1-216-308-00	s METAL, CHIP 4.7 5% 1/10W
R102	1-218-883-11	s METAL, CHIP 33K 0.5% 1/16W
R103	Δ 1-218-890-11	s METAL, CHIP 62K 0.5% 1/16W
R104	1-218-895-11	s METAL, CHIP 100K 0.5% 1/16W
R105	1-216-043-00	s METAL, CHIP 560 5% 1/10W
R106	1-216-025-00	s METAL, CHIP 100 5% 1/10W
R107	9-885-001-28	s METAL, CHIP 13
R108	1-218-831-11	s METAL, CHIP 220 0.5% 1/16W

(MAIN BOARD)

Ref. No. or Q'ty	Part No.	SP Description
RV1	Δ 9-885-001-29	s RES, VAR METAL 1K
RV2	Δ 9-885-001-30	s RES, VAR METAL 5K
RV3	Δ 9-885-001-31	s RES, VAR METAL 10K
RV4	9-885-001-32	s RES, VAR METAL 200
RV7	9-885-001-33	s RES, VAR METAL 500
RV8	9-885-001-33	s RES, VAR METAL 500
RV14	Δ 9-885-001-30	s RES, VAR METAL 5K
RV15	9-885-001-33	s RES, VAR METAL 500

SUB BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-761-319-11	o MOUNTED CIRCUIT BOARD, SUB (for DXF-801)
1pc	1-761-319-21	o MOUNTED CIRCUIT BOARD, SUB (for DXF-801CE)
2pcs	9-885-001-00	s SPACER, LM-4
C31	9-904-851-01	s TANTALUM, CHIP 10uF 20% 16V
C32	9-904-851-01	s TANTALUM, CHIP 10uF 20% 16V
C33	1-104-912-11	s TANTALUM, CHIP 3.3uF 20% 16V
C34	1-163-125-00	s CERAMIC, CHIP 220pF 5% 50V
C35	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C36	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C37	9-904-851-01	s TANTALUM, CHIP 10uF 20% 16V
C38	9-904-851-01	s TANTALUM, CHIP 10uF 20% 16V
C39	1-135-177-21	s TANTALUM, CHIP 1uF 20% 16V
C40	1-130-481-00	s FILM 6800pF 5% 50V
C41	1-136-287-11	s FILM 4700pF 5% 100V
C42	1-130-487-00	s FILM 0.022uF 5% 50V
C43	1-135-177-21	s TANTALUM, CHIP 1uF 20% 16V
C44	9-904-851-01	s TANTALUM, CHIP 10uF 20% 16V
C45	1-135-177-21	s TANTALUM, CHIP 1uF 20% 16V
C46	1-130-479-00	s FILM 4700pF 5% 50V
C47	9-980-617-01	s ELECT 100uF 20% 16V
C75	9-904-851-01	s TANTALUM, CHIP 10uF 20% 16V
C76	9-904-851-01	s TANTALUM, CHIP 10uF 20% 16V
C77	1-401-913-11	s TANTALUM, CHIP 10uF 20% 16V
C78	1-104-911-11	s TANTALUM, CHIP 33uF 20% 10V
C80	9-885-001-06	s CERAMIC, CHIP 4.7uF 10V
C81	1-104-911-11	s TANTALUM, CHIP 33uF 20% 10V
C82	9-885-001-07	s TANTALUM, CHIP 4.7uF 20V
C85	9-885-001-08	s TANTALUM, CHIP 10uF 20V
C86	1-164-232-11	s CERAMIC, CHIP 0.01uF 10% 100V
C87	1-104-911-11	s TANTALUM, CHIP 33uF 20% 10V
C88	9-885-001-09	s CERAMIC, CHIP 1uF 10V
C89	1-164-232-11	s CERAMIC, CHIP 0.01uF 10% 100V
C90	1-163-251-11	s CERAMIC, CHIP 100pF 5% 50V
C91	1-163-255-91	s CERAMIC, CHIP 150pF 5% 50V
CN9	1-569-531-11	s HOUSING, CONNECTOR 20P
D25	8-719-820-41	s DIODE 1SS302
D26	8-719-941-86	s DIODE DAN202U
D27	9-904-843-01	s DIODE HZK9CL
DL1	1-411-383-11	s DELAY LINE 80ns
IC11	Δ 8-759-300-28	s IC HA11423MP
IC12	8-759-337-40	s IC NJM2904V(TE2)
LED1	8-719-950-44	s LED GL5LR40 RED
LED2	8-719-950-44	s LED GL5LR40 RED
LED9	9-885-001-05	s LED NSPW315BS
Q10	8-729-905-35	s TRANSISTOR 2SC4081-R
Q11	8-729-117-72	s TRANSISTOR 2SC4178-F13
Q15	8-729-905-35	s TRANSISTOR 2SC4081-R
Q16	8-729-905-35	s TRANSISTOR 2SC4081-R
Q17	8-729-905-35	s TRANSISTOR 2SC4081-R
Q18	8-729-905-23	s TRANSISTOR 2SA1576-R
Q19	8-729-403-29	s TRANSISTOR XN6435
Q20	8-729-024-56	s TRANSISTOR 2SA1808-P
Q21	8-729-118-62	s TRANSISTOR 2SK852-TLX3
Q22	8-729-117-72	s TRANSISTOR 2SC4178-F13

(SUB BOARD)

Ref. No. or Q'ty	Part No.	SP Description
Q23	9-904-849-01	s TRANSISTOR 2SC4102
Q24	9-904-849-01	s TRANSISTOR 2SC4102
Q25	9-904-849-01	s TRANSISTOR 2SC4102
Q26	8-729-927-90	s TRANSISTOR 2SA1579-RS
Q27	8-729-905-35	s TRANSISTOR 2SC4081-R
Q28	8-729-403-32	s TRANSISTOR XN6534
R75	1-218-871-11	s METAL, CHIP 10K 0.5% 1/16W
R76	1-218-823-11	s METAL, CHIP 100 0.5% 1/16W
R77	Δ 1-218-887-11	s METAL, CHIP 47K 0.5% 1/16W
R78	Δ 1-218-887-11	s METAL, CHIP 47K 0.5% 1/16W
R79	1-218-865-11	s METAL, CHIP 5.6K 0.5% 1/16W
R80	1-216-025-00	s METAL, CHIP 100 5% 1/10W
R81	1-216-071-00	s METAL, CHIP 8.2K 5% 1/10W
R82	1-218-825-11	s METAL, CHIP 120 0.5% 1/16W
R83	1-218-891-11	s METAL, CHIP 68K 0.5% 1/16W
R84	1-216-027-00	s METAL, CHIP 120 5% 1/10W
R85	1-216-067-00	s METAL, CHIP 5.6K 5% 1/10W
R86	1-216-093-00	s METAL, CHIP 68K 5% 1/10W
R87	1-216-075-00	s METAL, CHIP 12K 5% 1/10W
R88	1-218-869-11	s METAL, CHIP 8.2K 0.5% 1/16W
R89	Δ 1-216-089-00	s METAL, CHIP 47K 5% 1/10W
R90	Δ 1-216-057-00	s METAL, CHIP 2.2K 5% 1/10W
R91	1-218-903-11	s METAL, CHIP 220K 0.5% 1/16W
R92	Δ 1-218-887-11	s METAL, CHIP 47K 0.5% 1/16W
R93	9-939-459-01	s METAL, CHIP 12
R94	1-218-865-11	s METAL, CHIP 5.6K 0.5% 1/16W
R95	1-216-073-00	s METAL, CHIP 10K 5% 1/10W
R96	1-216-311-00	s METAL, CHIP 6.8 5% 1/10W
R120	1-218-871-11	s METAL, CHIP 10K 0.5% 1/16W
R121	1-218-878-11	s METAL, CHIP 20K 0.5% 1/16W
R122	9-885-001-10	s METAL, CHIP 6.2K
R123	1-216-043-00	s METAL, CHIP 560 5% 1/10W
R124	1-216-073-00	s METAL, CHIP 10K 5% 1/10W
R125	1-216-049-11	s METAL, CHIP 1K 5% 1/10W
R126	1-216-073-00	s METAL, CHIP 10K 5% 1/10W
R127	1-216-081-00	s METAL, CHIP 22K 5% 1/10W
R128	1-216-025-00	s METAL, CHIP 100 5% 1/10W
R129	1-216-071-00	s METAL, CHIP 8.2K 5% 1/10W
R130	9-885-001-11	s METAL, CHIP 43
R131	1-216-042-00	s METAL, CHIP 510 5% 1/10W
R132	1-218-863-11	s METAL, CHIP 4.7K 0.5% 1/16W
R133	1-218-877-11	s METAL, CHIP 18K 5% 1/10W
R134	1-218-839-11	s METAL, CHIP 470 5% 1/10W
R135	1-218-831-11	s METAL, CHIP 220 0.5% 1/16W
R136	1-216-045-00	s METAL, CHIP 680 0.5% 1/16W
R137	1-218-831-11	s METAL, CHIP 220 0.5% 1/16W
R138	1-216-025-00	s METAL, CHIP 100 5% 1/10W
R139	1-216-061-00	s METAL, CHIP 3.3K 0.5% 1/16W
R140	1-216-073-00	s METAL, CHIP 10K 5% 1/10W
R141	1-216-033-00	s METAL, CHIP 220 5% 1/10W
R142	1-216-311-00	s METAL, CHIP 6.8 5% 1/10W
R143	1-216-025-00	s METAL, CHIP 100 5% 1/10W
R144	1-218-871-11	s METAL, CHIP 10K 0.5% 1/16W
R145	1-216-073-00	s METAL, CHIP 10K 5% 1/10W
R146	1-216-073-00	s METAL, CHIP 10K 5% 1/10W
R147	1-216-047-00	s METAL, CHIP 820 5% 1/10W
R148	1-216-037-00	s METAL, CHIP 330 5% 1/10W
R149	1-218-838-11	s METAL, CHIP 430 0.5% 1/16W
R151	1-218-863-11	s METAL, CHIP 4.7K 0.5% 1/16W

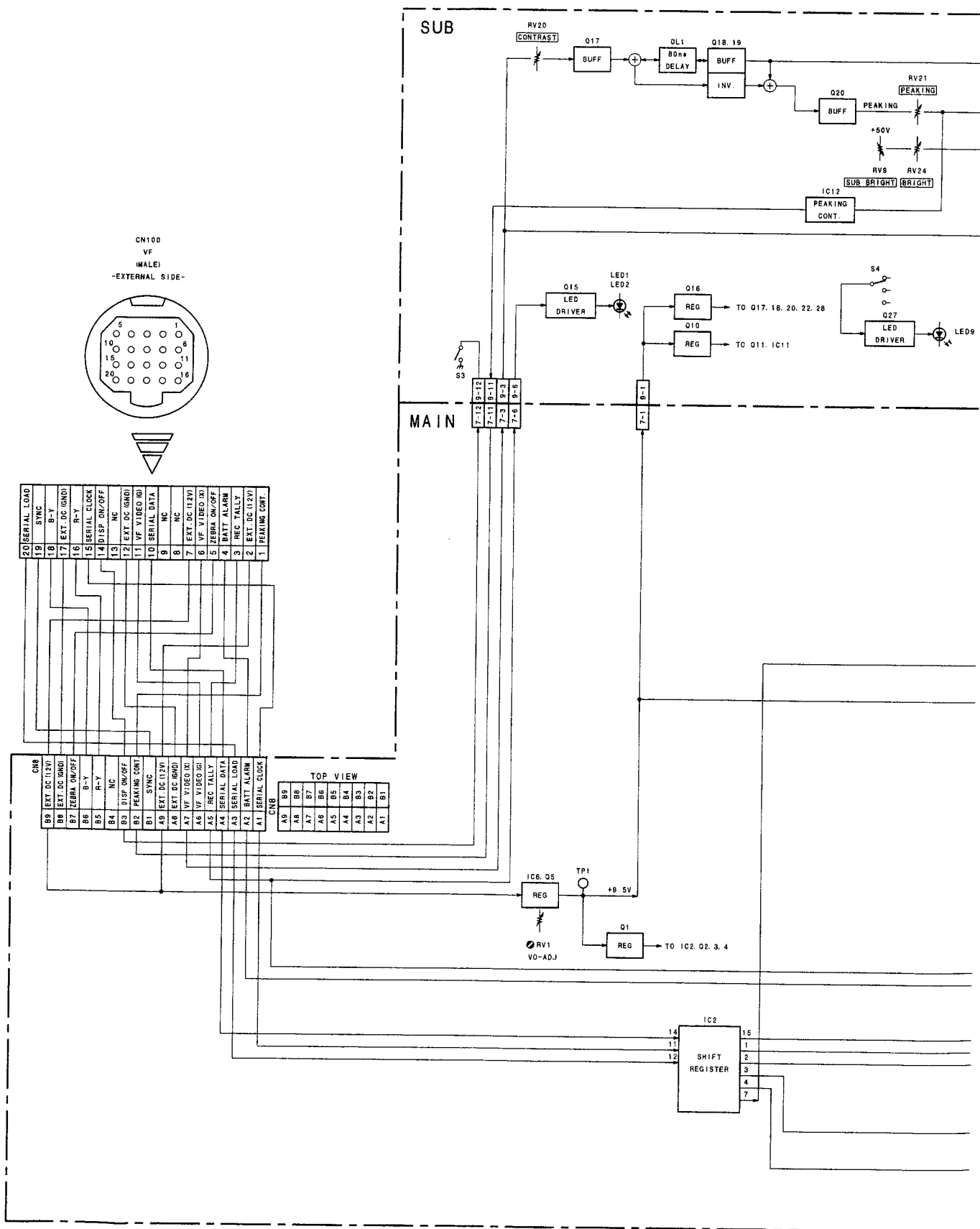
(SUB BOARD)

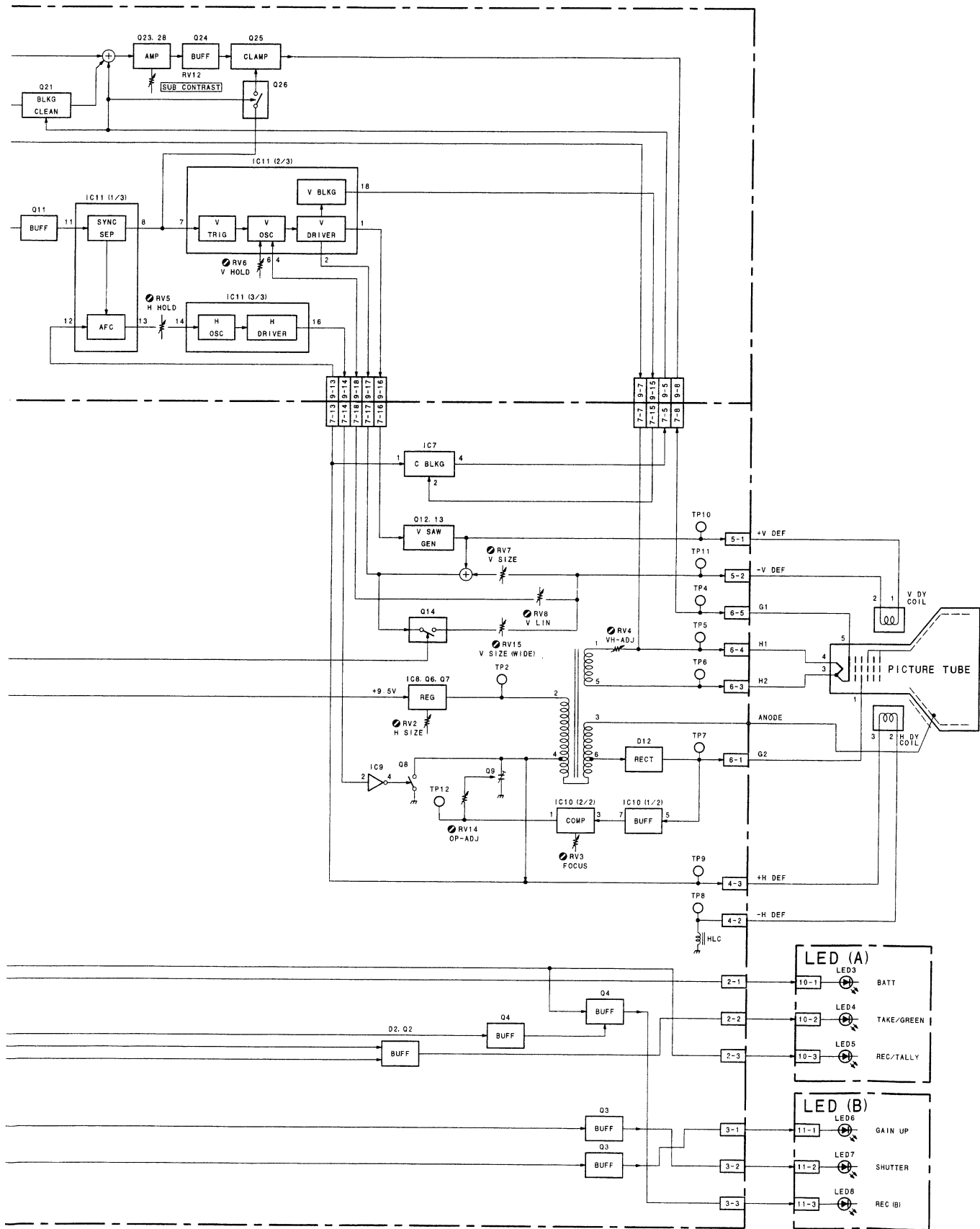
Ref. No. or Q'ty	Part No.	SP Description
R152	1-216-067-00	s METAL, CHIP 5.6K 5% 1/10W
R153	9-885-001-10	s METAL, CHIP 6.2K
R154	1-216-055-00	s METAL, CHIP 1.8K 5% 1/10W
R155	1-216-025-00	s METAL, CHIP 100 5% 1/10W
R156	1-216-073-00	s METAL, CHIP 10K 5% 1/10W
R157	1-216-081-00	s METAL, CHIP 22K 5% 1/10W
R158	1-216-073-00	s METAL, CHIP 10K 5% 1/10W
R159	1-216-057-00	s METAL, CHIP 2.2K 5% 1/10W
R160	1-216-091-00	s METAL, CHIP 56K 5% 1/10W
R161	1-216-085-00	s METAL, CHIP 33K 5% 1/10W
R162	1-216-689-11	s METAL, CHIP 39K 5% 1/10W
R163	9-885-001-12	s METAL, CHIP 3.3M
R167	1-216-087-11	s METAL, CHIP 39K 5% 1/10W
R168	1-218-880-11	s METAL, CHIP 24K 0.5% 1/16W
R169	1-218-871-11	s METAL, CHIP 10K 0.5% 1/16W
R170	1-218-878-11	s METAL, CHIP 20K 0.5% 1/16W
R171	1-216-041-11	s METAL, CHIP 470 5% 1/10W
R172	1-216-049-11	s METAL, CHIP 1K 5% 1/10W
R173	1-218-847-11	s METAL, CHIP 1K 0.5% 1/16W
R174	1-216-033-00	s METAL, CHIP 220 5% 1/10W
R176	1-216-036-00	s METAL, CHIP 300 5% 1/10W
RV5	Δ 9-885-001-01	s RES, VAR METAL 5K
RV6	Δ 9-885-001-01	s RES, VAR METAL 5K
RV20	9-933-301-01	s RES, VAR CARBON 2K
RV21	9-939-682-01	s RES, VAR CARBON 5K
RV22	9-885-001-02	s RES, VAR METAL 200
RV23	9-885-001-03	s RES, VAR METAL 50K
RV24	9-933-302-01	s RES, VAR CARBON 10K
S1	1-570-985-11	s SWITCH, TOGGLE
S3	1-570-984-11	s SWITCH, TOGGLE
S4	9-885-001-04	s SWITCH, SLIDE

Section 5

Diagrams

5-1. Block Diagram

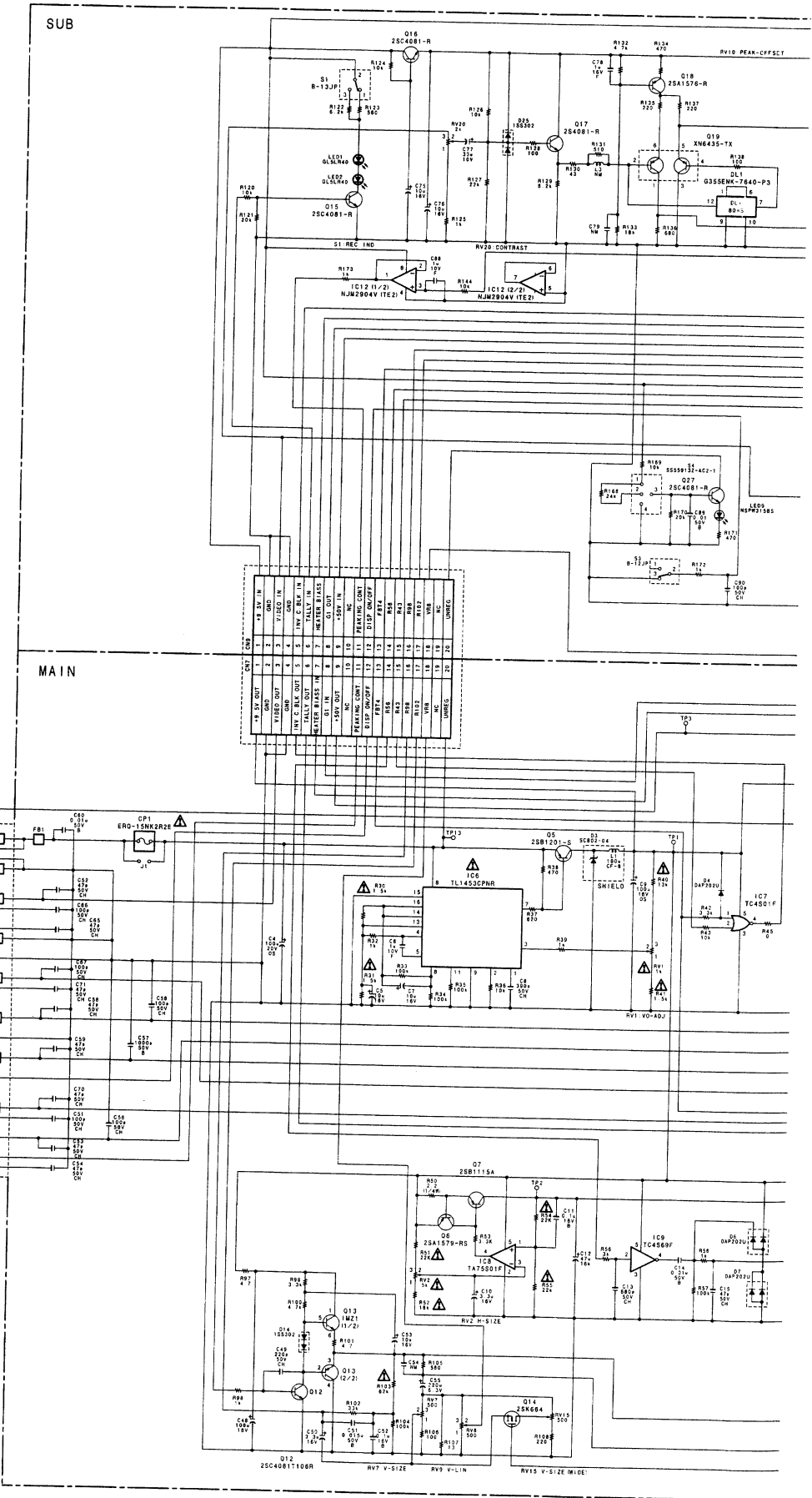
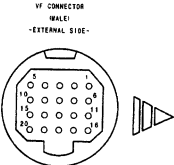


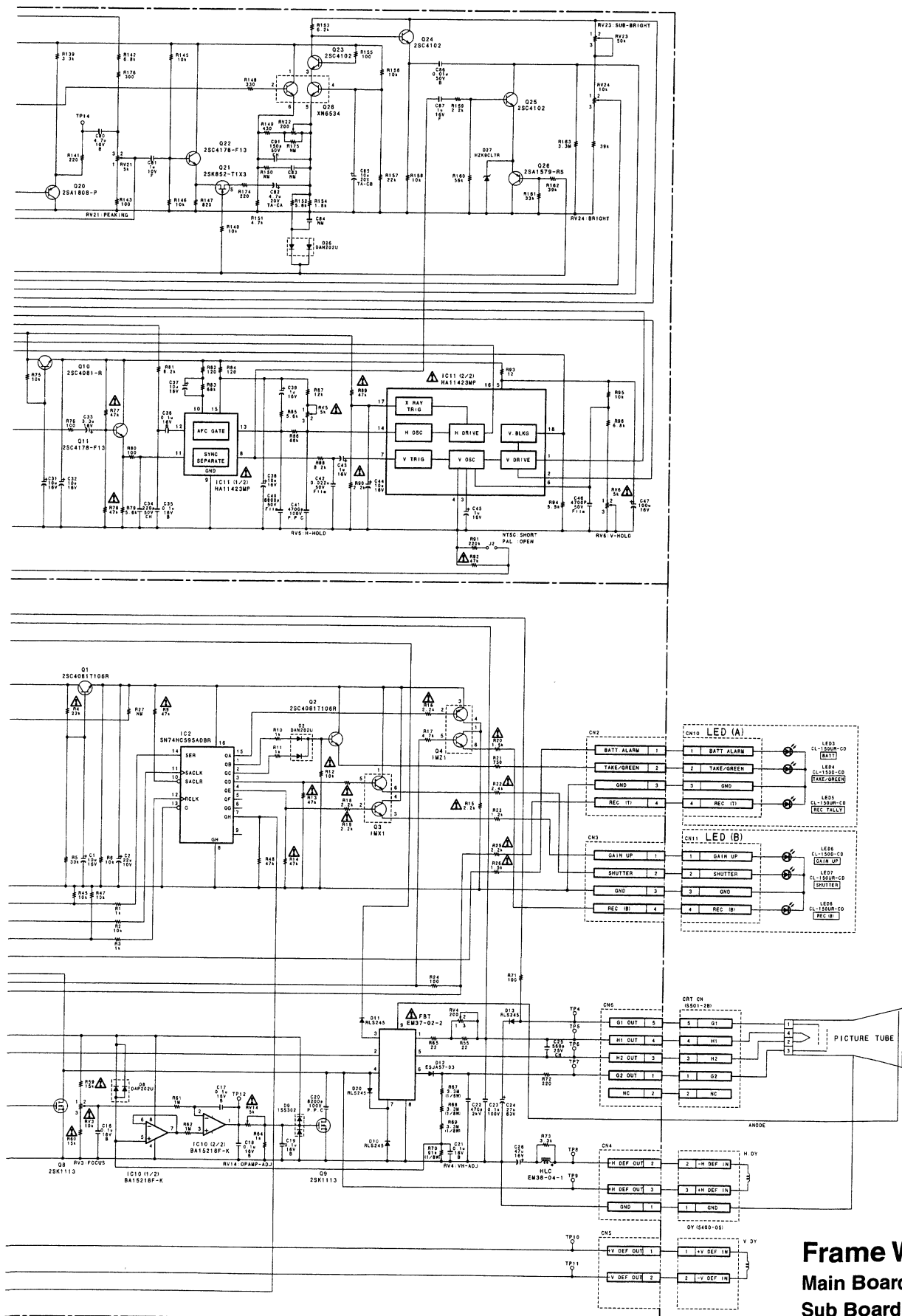


5-2. Schematic Diagram

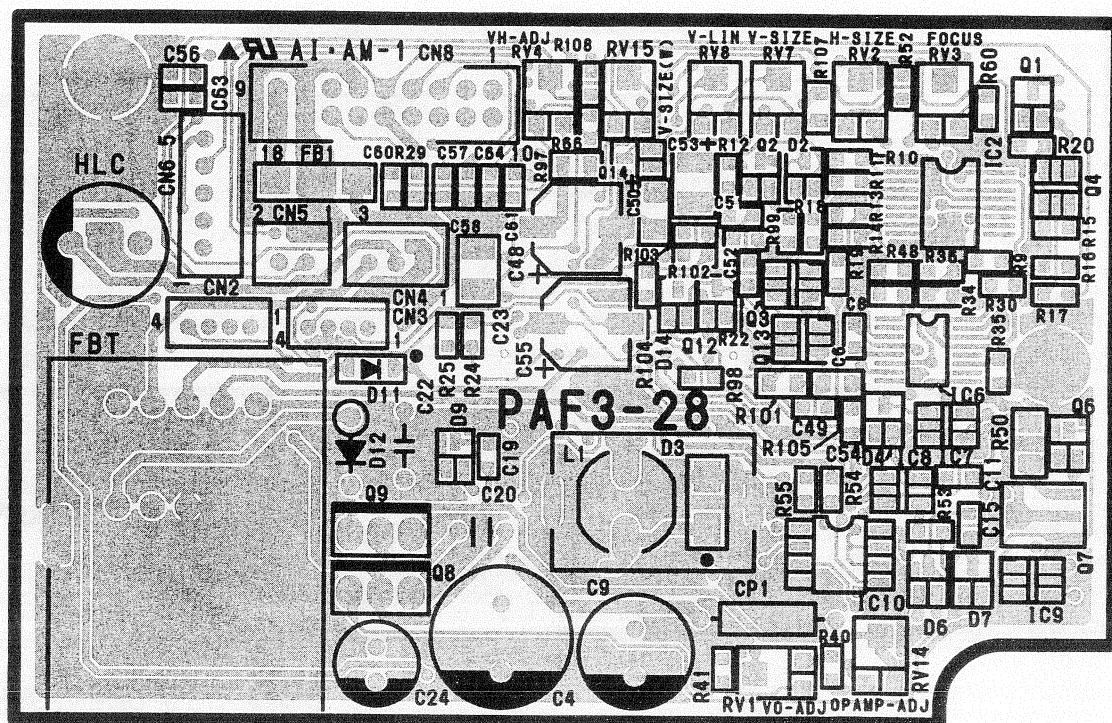
1

2

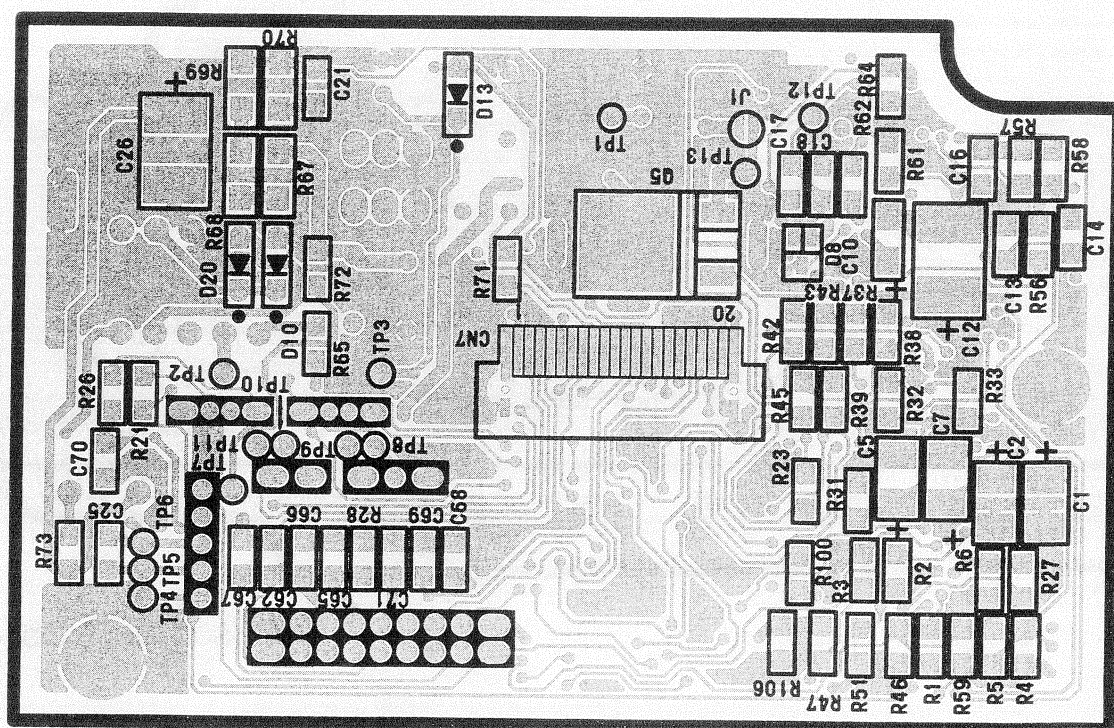




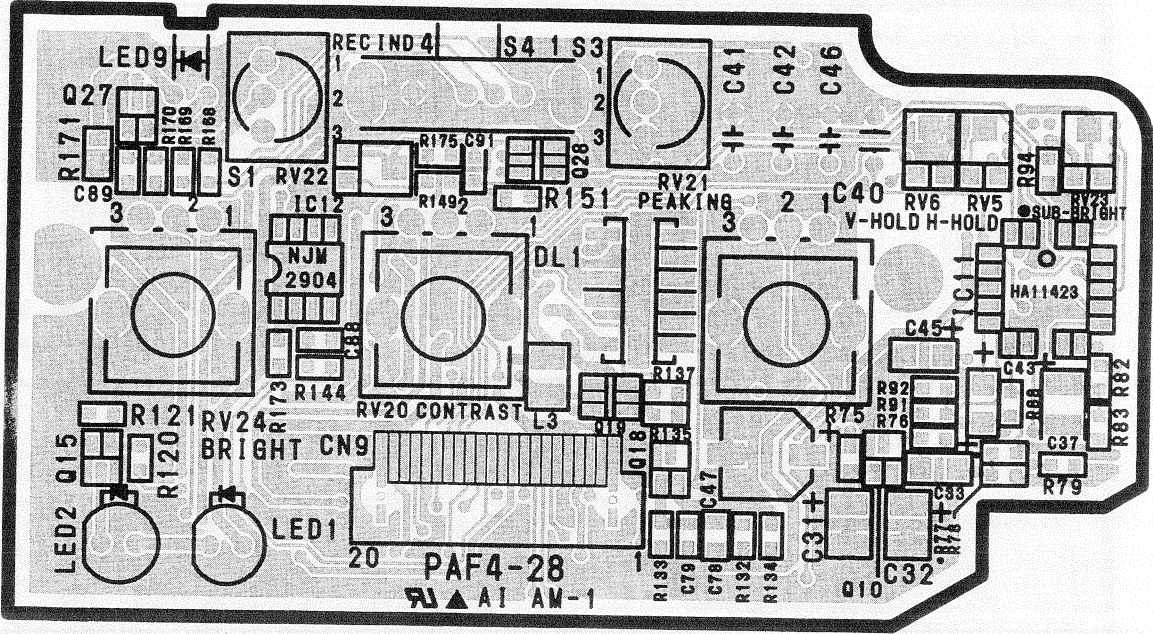
Section 6 Board Layouts



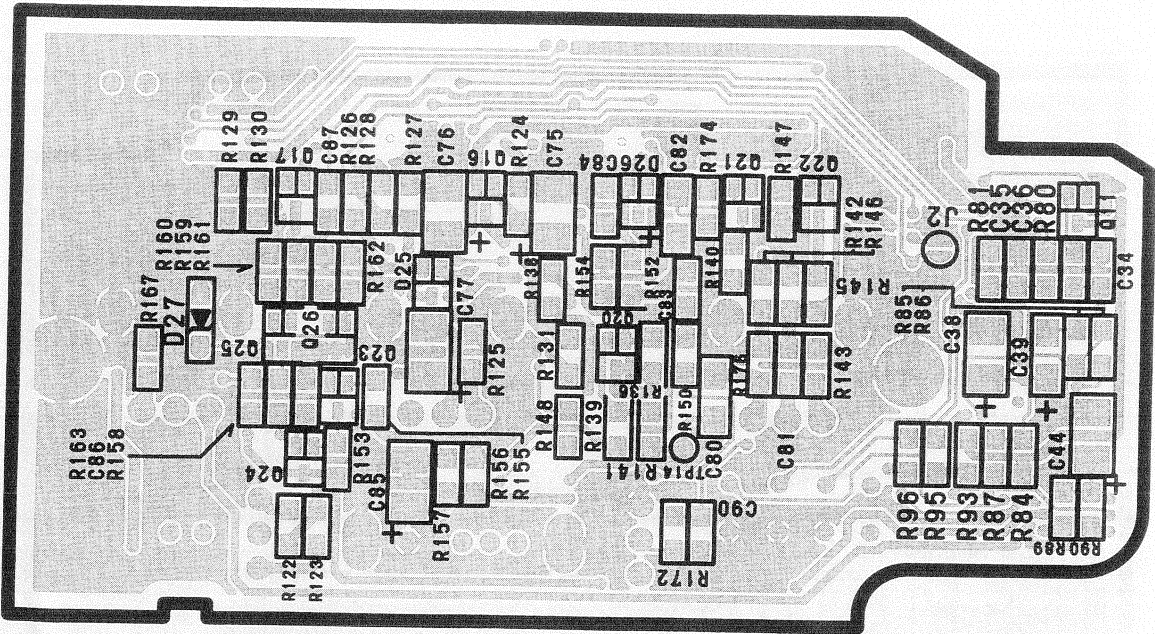
MAIN -COMPONENT SIDE-



MAIN -SOLDERING SIDE-

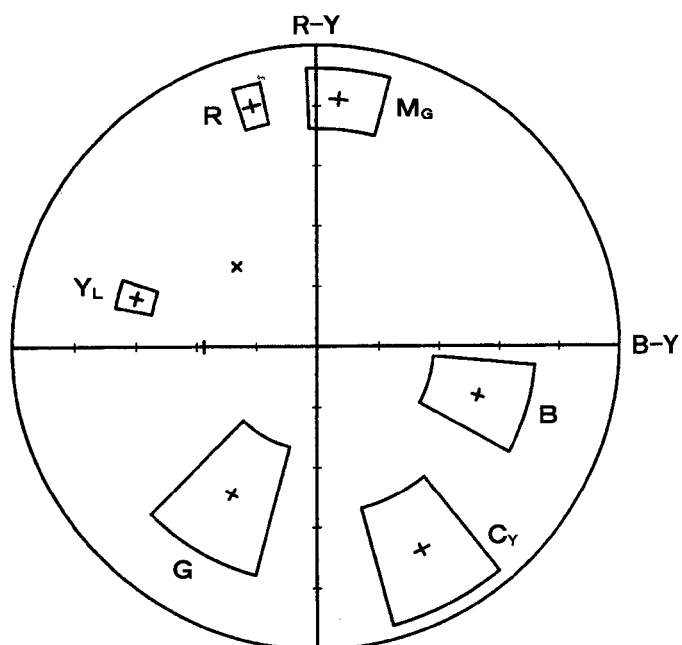


SUB -COMPONENT SIDE-



SUB -SOLDERING SIDE-

Take a copy of CAMERA COLOR
REPRODUCTION FRAME with
a clear sheet for use.



DSR-250/250P



DSR-250/250P

RMT-811

SONY®

SERVICE MANUAL

US Model
Canadian Model

DSR-250

AEP Model

DSR-250P

SUPPLEMENT-1

File this supplement-1 with the Service Manual.
(PV00-019)

Subject:

Change of Self-diagnosis code table.

Change of Adjustments.

Addition of Supplied parts.

(Refer to page 10)

SELF-DIAGNOSIS FUNCTION

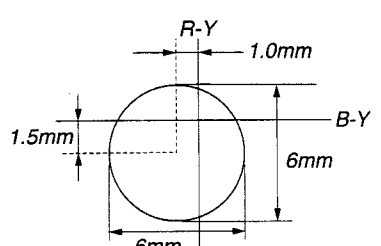
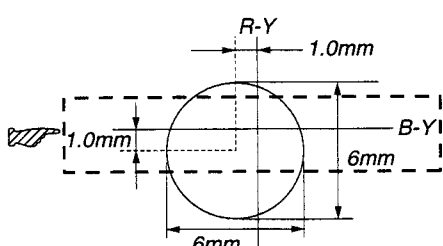
4. SELF-DIAGNOSIS CODE TABLE

 : Added portion.  : Changed portion.  : Deleted portion.

Self-diagnosis Code				Symptom/State	Correction
Repaired by:	Block Function	Detailed Code			
C	3	1	2 0	T reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
	~~3~~	~~1~~	~~2 1~~	~~Winding S reel fault when counting the rest of tape.~~	~~Load the tape again, and perform operations from the beginning.~~
	C	3	1 2 2	T reel fault. (FG fault.)	Load the tape again, and perform operations from the beginning.
	C	3	1 2 3	S reel fault. (FG fault.)	Load the tape again, and perform operations from the beginning.
	~~C~~	~~3~~	~~1 2 4~~	~~T reel fault.~~	~~Load the tape again, and perform operations from the beginning.~~
	C	3	1 2 5	Reel motor fault. (FG fault.)	Load the tape again, and perform operations from the beginning.
	~~C~~	~~3~~	~~1 3 0~~	~~FG fault when starting capstan.~~	~~Load the tape again, and perform operations from the beginning.~~
	C	3	1 4 0	FG fault when starting drum.	Load the tape again, and perform operations from the beginning.
	~~C~~	~~3~~	~~1 4 2~~	~~FG fault during normal drum operations.~~	~~Load the tape again, and perform operations from the beginning.~~
	C	3	1 7 0	Cassette compartment motor fault (LOAD direction)	Load the tape again, and perform operations from the beginning.
	C	3	1 7 1	Cassette compartment motor fault (UNLOAD direction)	Load the tape again, and perform operations from the beginning.
	~~C~~	~~3~~	~~1 7 2~~	~~Cassette unloading retry fault~~	~~Load the tape again, and perform operations from the beginning.~~
	C	3	2 1 0	LOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
	C	3	2 1 1	UNLOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
	C	3	2 2 0	T reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
	~~C~~	~~3~~	~~2 2 1~~	~~Winding S reel fault when counting the rest of tape.~~	~~Remove the battery or power cable, connect, and perform operations from the beginning.~~
	C	3	2 2 2	T reel fault. (FG fault.)	Remove the battery or power cable, connect, and perform operations from the beginning.
	C	3	2 2 3	S reel fault. (FG fault.)	Remove the battery or power cable, connect, and perform operations from the beginning.
	~~C~~	~~3~~	~~2 2 4~~	~~T reel fault.~~	~~Remove the battery or power cable, connect, and perform operations from the beginning.~~
	C	3	2 2 5	Reel motor fault. (FG fault.)	Remove the battery or power cable, connect, and perform operations from the beginning.
	~~C~~	~~3~~	~~2 3 0~~	~~FG fault when starting capstan.~~	~~Remove the battery or power cable, connect, and perform operations from the beginning.~~
	C	3	2 4 0	FG fault when starting drum	Remove the battery or power cable, connect, and perform operations from the beginning.
	~~C~~	~~3~~	~~2 4 2~~	~~FG fault during normal drum operations~~	~~Remove the battery or power cable, connect, and perform operations from the beginning.~~
	C	3	2 7 0	Cassette compartment motor fault (LOAD direction)	Remove the battery or power cable, connect, and perform operations from the beginning.
	C	3	2 7 1	Cassette compartment motor fault (UNLOAD direction)	Remove the battery or power cable, connect, and perform operations from the beginning.
	C	3	2 7 2	Cassette unloading retry fault	Remove the battery or power cable, connect, and perform operations from the beginning.
E	6	1	0 0	Difficult to adjust focus (Cannot initialize focus.)	Inspect the lens block focus reset sensor (Pin 25 of CN001 on VI-156 board) when focusing is performed when the focusing is rotated in the focus manual mode, and the focus motor drive circuit (IC140 of VI-156 board) when the focusing is not performed.

SECTION 5. ADJUSTMENTS

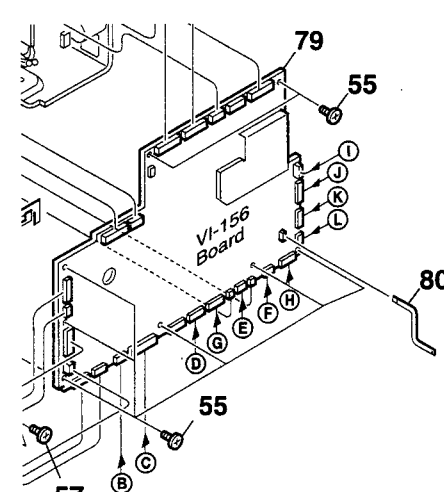
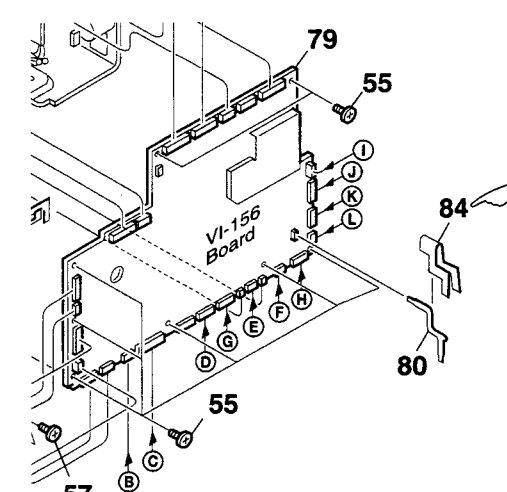
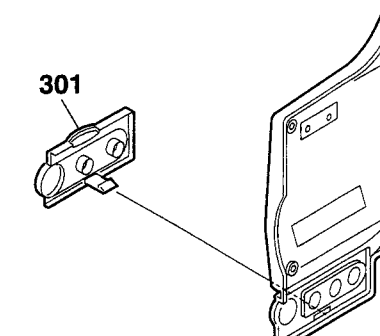
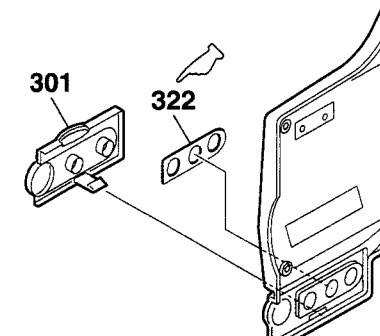
⬅ : Added portion. ➡ : Changed portion.

Page	Before Change	After Change																																				
5-14	1-2-3. INITIALIZATION OF E, F PAGE DATA 3. F Page Table <table><thead><tr><th rowspan="2">Address</th><th colspan="2">Initial value</th><th rowspan="2">Remark</th></tr><tr><th>NTSC</th><th>PAL</th></tr></thead><tbody><tr><td>70</td><td>89</td><td>89</td><td>HALL adj.</td></tr><tr><td>71 to FF</td><td colspan="2">Fixed data-1</td><td></td></tr></tbody></table> Table. 5-1-7.	Address	Initial value		Remark	NTSC	PAL	70	89	89	HALL adj.	71 to FF	Fixed data-1			<table><thead><tr><th rowspan="2">Address</th><th colspan="2">Initial value</th><th rowspan="2">Remark</th></tr><tr><th>NTSC</th><th>PAL</th></tr></thead><tbody><tr><td>70</td><td>89</td><td>89</td><td>HALL adj.</td></tr><tr><td>71 to AA</td><td colspan="2">Fixed data-1</td><td></td></tr><tr><td>AB</td><td colspan="2">Fixed data-2</td><td></td></tr><tr><td>AC to FF</td><td colspan="2">Fixed data-1</td><td></td></tr></tbody></table> Table. 5-1-7.	Address	Initial value		Remark	NTSC	PAL	70	89	89	HALL adj.	71 to AA	Fixed data-1			AB	Fixed data-2			AC to FF	Fixed data-1		
Address	Initial value		Remark																																			
	NTSC	PAL																																				
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70	89	89	HALL adj.																																			
71 to AA	Fixed data-1																																					
AB	Fixed data-2																																					
AC to FF	Fixed data-1																																					
5-26	1-3. CAMERA SYSTEM ADJUSTMENTS 19. White Balance Check  Fig. 5-1-13. (B)	 Fig. 5-1-13. (B)																																				
5-64	3-2. SYSTEM CONTROL SYSTEM ADJUSTMENT 2-2. Serial No. Input Input method: 1) Select page: 0, address: 01, and set data: 01. 2) Read the serial No. on the name plate, and take it as D₁. Example: If the serial No. is 77881. D₁=77881 3) Obtain D₂ and H₁ corresponding to D₁ from Table 5-3-2. Example: If D₁ is "77881". D₂=D₁-65536=12345 H₁=FE	Input method: 1) Select page: 0, address: 01, and set data: 01. 2) Read the serial No. on the name plate, and take it as D₁. Example: If the serial No. is 77881. D₁=77881 Note: Use six digits of the low rank when a serial No. is more than seven digits. 3) Obtain D₂ and H₁ corresponding to D₁ from Table 5-3-2. Example: If D₁ is "77881". D₂=D₁-65536=12345 H₁=FE																																				

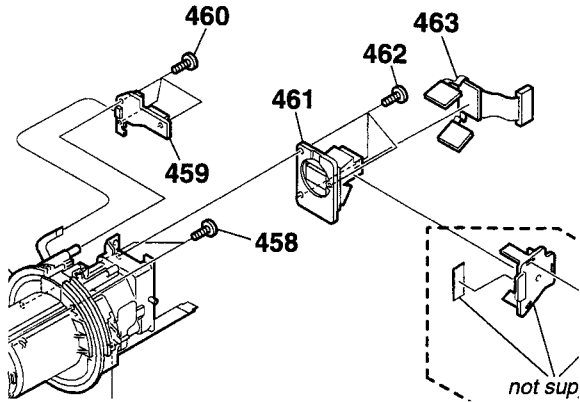
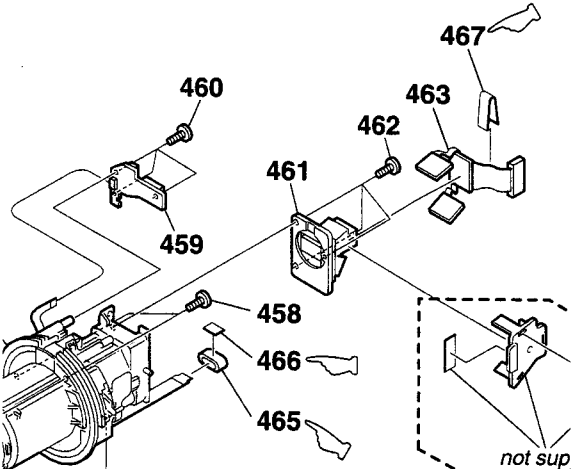
SECTION 6. REPAIR PARTS LIST

6-1. EXPLODED VIEWS

⬅ : Added portion.

Page	Before Change	After Change																												
6-2	6-1-2. OVERALL SECTION-2  <table><tr><th>Ref. No.</th><th>Part No.</th><th>Description</th><th>Remarks</th></tr><tr><td>82</td><td>3-061-062-01</td><td>BOLT (M2.6), SPRING</td><td></td></tr><tr><td>83</td><td>1-960-908-11</td><td>HARNESS (JJ-059)</td><td></td></tr></table>	Ref. No.	Part No.	Description	Remarks	82	3-061-062-01	BOLT (M2.6), SPRING		83	1-960-908-11	HARNESS (JJ-059)		 <table><tr><th>Ref. No.</th><th>Part No.</th><th>Description</th><th>Remarks</th></tr><tr><td>82</td><td>3-061-062-01</td><td>BOLT (M2.6), SPRING</td><td></td></tr><tr><td>83</td><td>1-960-908-11</td><td>HARNESS (JJ-059)</td><td></td></tr><tr><td>* 84</td><td>3-066-154-01</td><td>SHEET, MS</td><td></td></tr></table>	Ref. No.	Part No.	Description	Remarks	82	3-061-062-01	BOLT (M2.6), SPRING		83	1-960-908-11	HARNESS (JJ-059)		* 84	3-066-154-01	SHEET, MS	
	Ref. No.	Part No.	Description	Remarks																										
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83	1-960-908-11	HARNESS (JJ-059)																												
* 84	3-066-154-01	SHEET, MS																												
6-7	6-1-7. CABINET (L) ASSEMBLY  <table><tr><th>Ref. No.</th><th>Part No.</th><th>Description</th><th>Remarks</th></tr><tr><td>321</td><td>X-3950-959-1</td><td>CABINET (L) ASSY (250)</td><td></td></tr><tr><td>321</td><td>X-3951-182-1</td><td>CABINET (L) ASSY (250P)</td><td></td></tr></table>	Ref. No.	Part No.	Description	Remarks	321	X-3950-959-1	CABINET (L) ASSY (250)		321	X-3951-182-1	CABINET (L) ASSY (250P)		 <table><tr><th>Ref. No.</th><th>Part No.</th><th>Description</th><th>Remarks</th></tr><tr><td>321</td><td>X-3950-959-1</td><td>CABINET (L) ASSY (250)</td><td></td></tr><tr><td>321</td><td>X-3951-182-1</td><td>CABINET (L) ASSY (250P)</td><td></td></tr><tr><td>* 322</td><td>3-066-290-01</td><td>PANEL, JACK</td><td></td></tr></table>	Ref. No.	Part No.	Description	Remarks	321	X-3950-959-1	CABINET (L) ASSY (250)		321	X-3951-182-1	CABINET (L) ASSY (250P)		* 322	3-066-290-01	PANEL, JACK	
	Ref. No.	Part No.	Description	Remarks																										
321	X-3950-959-1	CABINET (L) ASSY (250)																												
321	X-3951-182-1	CABINET (L) ASSY (250P)																												
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321	X-3950-959-1	CABINET (L) ASSY (250)																												
321	X-3951-182-1	CABINET (L) ASSY (250P)																												
* 322	3-066-290-01	PANEL, JACK																												

 : Added portion.

Page	Before Change				After Change			
6-10	6-1-10. LENS BLOCK SECTION-2							
								
	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remarks</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remarks</u>
	464	X-3950-586-1	COVER ASSY, PRISM		464	X-3950-586-1	COVER ASSY, PRISM	
					465	1-543-936-11	CORE (FPC) 	
	* 466	3-066-155-01	CUSHION 		* 466	3-066-155-01	CUSHION 	
	* 467	3-066-153-01	SHEET, VI 		* 467	3-066-153-01	SHEET, VI 	